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analog

SCIENCE FACT — SCIENCE FICTION

GUNPOWDER GOD by H. BEAM PIPER

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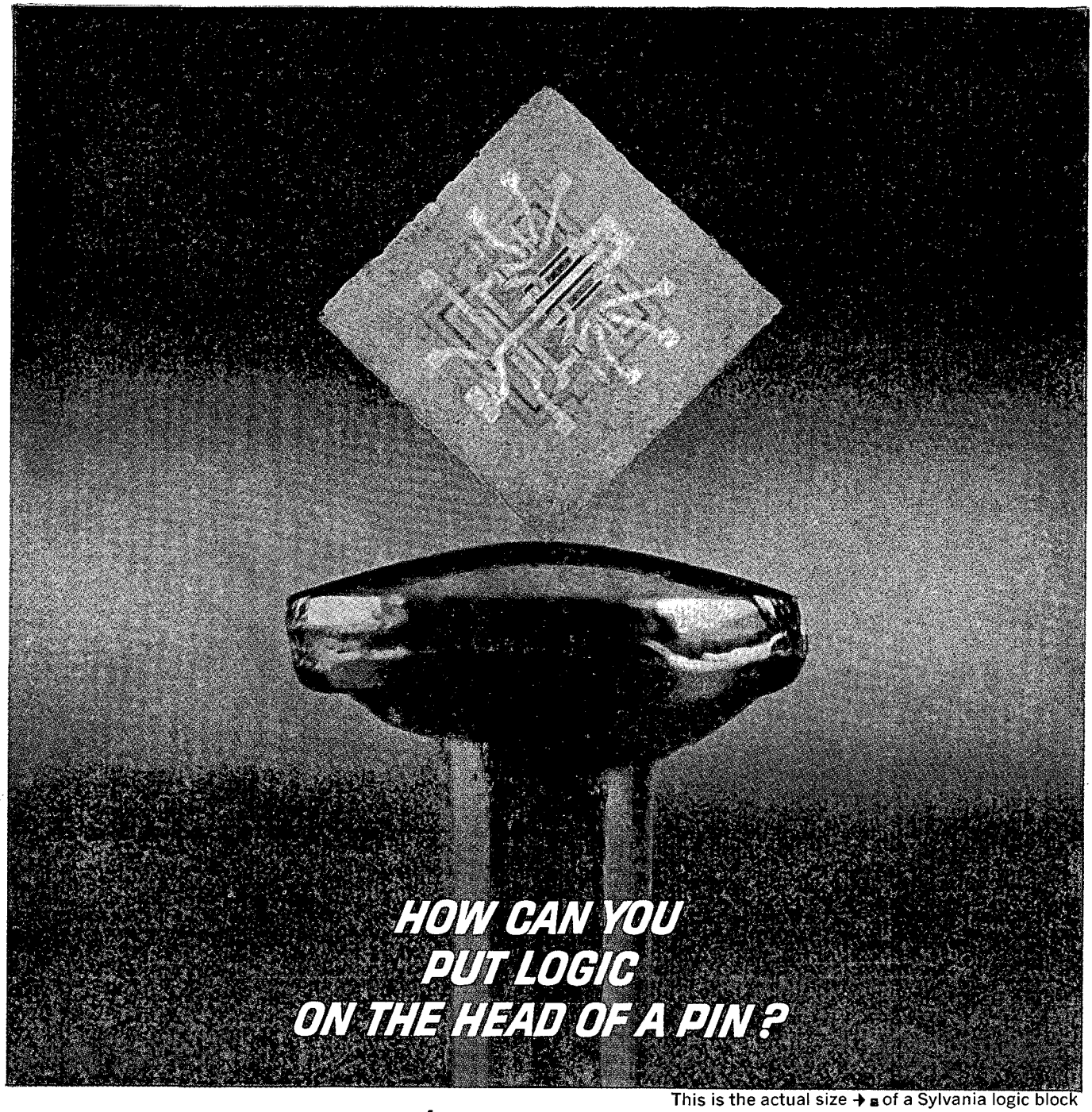

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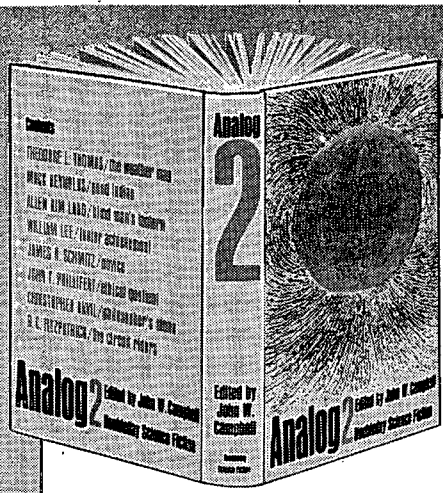

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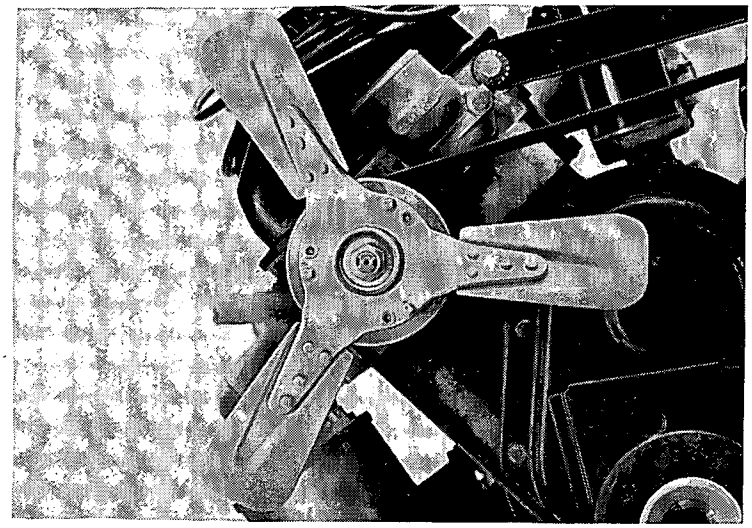
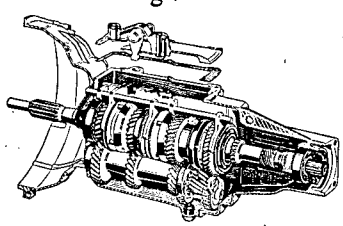


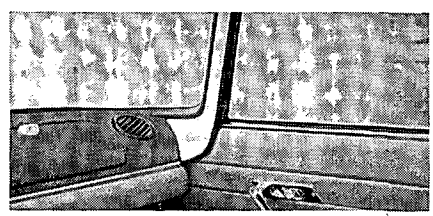
doesn't function until engine temperature reaches 180°

Only one car in the world offers this feature. On other cars the fan runs all the time—even when the engine is cold. On the Peugeot 404, however, the fan runs only when it is needed—namely when engine temperature reaches 180°. As a result of the fan's freewheeling, you get 4 to 5 additional horsepower, faster warmup, reduced engine drag, lower noise level and, most important, substantial fuel savings.



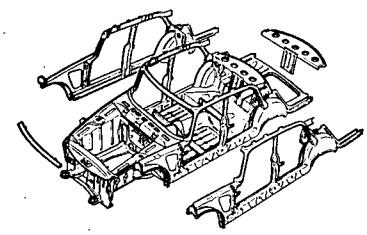
The Peugeot 404's transmission consists of four forward synchromesh gears and one reverse. All of the forward speeds are synchronized for smooth shifting. Because of the power and torque of the 404 engine, fourth speed is direct drive. The gears are of the noiseless helical type; ratios have been selected to match engine output for maximum performance and economy.

You'll notice that Peugeot's front windows don't have vents as most cars do. They're not needed, thanks to a unique fresh air ventilating system which



provides a smooth flow of air. Flush nozzles built into the dash distribute air wherever it is desired. Peugeot's ventilating system can even direct air at your feet for extra comfort. With the ventilating system on and the sunroof open, you can actually close all windows, which not only cuts down on street noises but gives you perfect ventilation without drafts.

The 404 is built with unit body construction. That is, the body is welded into one solid structure instead of being



bolted to a separate frame. One major advantage is the fact that greater strength is provided, with less weight. In addition, squeaks and rattles are far less likely to occur. The 404's body steel is constructed of heavy gauge steel (.9 mm thick) for durability and safety, consistent with the world-wide reputation of Peugeot.

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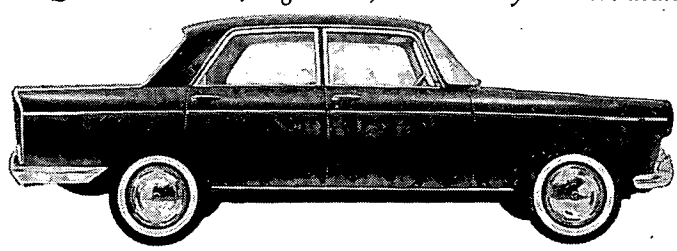

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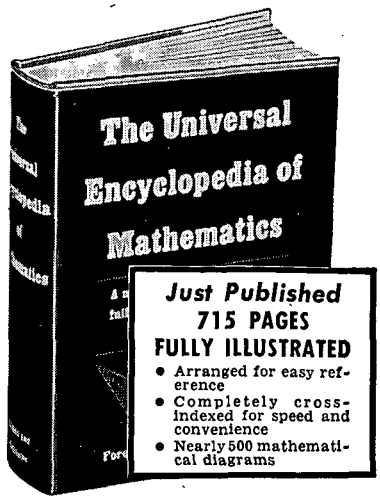
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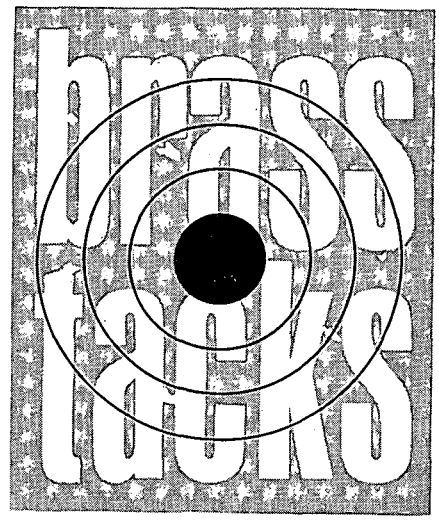

Dear Mr. Campbell:

Your "Tribesman, Barbarian, Citizen," classification system, supposedly defined in the May '61 and Aug. '64 issues, has confused me. You promised us a semantically workable set of definitions of the terms; you did not supply it.

I've been trying to work out a usable system which differs as little as possible from what I think you meant. A two-parameter scheme seems to fit best, the parameters being:

1. Ability to change basic premises —yes or no. Your phrase "ability to learn" includes both this and the ability to change behavior patterns, which all of the four types below can do.

2. Ultimate reference of values—internal (egoistic) or social. That is, in a conflict between what he thinks is best and what his society demands, which choice is taken?

The various pure types are defined in the table below:

For this system I have drawn freely from Riesman's "The Lonely Crowd" and from your editorials.

Some points to note:

1. The term "tribesman" commonly denotes a tribesman who is a member of an agriculturally-oriented, relatively non-mobile society. "Barbarian" usually means a tribesman who is a member of a hunting-oriented, fairly mobile primitive society.

2. When a new behavior pattern is forced upon either of the citizen types, they can change their premises to minimize the conflict set up. The tribesman, in such a case, will survive because his premises are not his own and the value-behavior conflict is contained within his society, not himself. The barbarian, however, has to contain the conflict within himself—and the pure barbarian having a value system in which survival is less important than holding a belief which is in conflict with the imposed behavior pattern just will not survive.

3. Being "unable to work for a living" is related to being a barbarian only in that once a barbarian acquires that orientation he can't be changed. A citizen with that orientation can be taught otherwise, and a tribesman will ordinarily be in a culture that does not allow that incapacity.

Now I can rephrase the thesis of your editorial:

"The barbarian—who does not accept responsibility for the effects of his actions on others—is the greatest menace to civilization today . . ."

I agree in full.

That Relativity Episode was interesting, but the mere fact of acceleration eliminates using special relativity until the acceleration has ceased to be observed in any of the uniformly moving systems we use. But for an approximation:

Assume the acceleration to be instantaneous, in order to simplify the math and to bring out the discontinuities. Eleven years before the planned firing time, a light is flashed at the left end down the shaft; then a point at that end accelerates eleven years after seeing the flash, and a point at the other end accelerates when the light reaches it, etcetera. This synchronizes the acceleration. Nearly one year after what observer 1 considers to be

ABLE TO CHANGE BASIC PREMISES:		
VALUE REFERENCE:	YES	NO
SOCIAL	OTHER-DIRECTED CITIZEN	TRIBESMAN
EGOISTIC	AUTONOMOUS CITIZEN	BARBARIAN

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the firing time, he notes that the left end of the shaft has not yet accelerated, as should be, but even the part opposite him hasn't: the clocks on that part of the shaft appear to have stopped in the infinite pseudogravitational field "existing" around the cylinder whose ends are at the distance from him that light could travel in the time since "firing time". He can observe, at any time until acceleration ceases, only the unaccelerated part as it was when the light left it. If he could observe it by non-electromagnetic means (psi) he would note that it was going "faster than light" when an accelerating point "caught up with" the other points—but no signal could be transferred to the observer by this means, because it would have to cross the pseudogravitational field to reach him. There would, in effect, be holes in space from which no information would be obtained.

With less acceleration, the strong discontinuities vanish—but the transfer of information from the shaft to the observers would still be warped, so that when the acceleration ceased to be measured by the observers, the shaft length would appear to be 1.1 light-years.

To answer the specific problem: none of the observers would see stars the next morning.

KENNETH W. RACHELS
115 E. North St.
Waverly, Ohio 45690

Two factors are missing in your analysis of the terms "tribesman" and "barbarian". 1. I suspect I really should originate a neologism to define, rather than redefining old terms. By "tribesman" I mean "a member of a ritual-taboo culture", i.e., a culturally-controlled individual. The fact that barbarian clans and septs are frequently called "tribes" confuses the term "tribesman". The Scots a few centuries ago were perfectly typical barbarians, primarily devoted to cattlerustling and internecine warfare. Their groupings were called Clans, as the old, and highly successful Clan Campbell.

2. Do not overlook the effect of any

continued on page 6

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brass tacks *continued from page 5*

cultural system as a selective breeding system. A ritual-taboo culture is a true totalitarian state—and it kills those who don't conform. The result is to breed a conformal type by selection for the desired characteristic, just as effectively as a dog-breeder does. The barbarian culture, on the other hand, selects just as effectively for a totally different set of characteristics.

I am well aware that it is standard orthodox doctrine that mental and personality characteristics aren't inheritable—it's all in how the individual is brought up.

Any firm believer in that nonsense should try, sometime, to train a Pointer to set, or a Setter to point. Or a thoroughbred Retreiver to stop retrieving chickens in a chicken-run. Or watch a Border Collie who's never had any training of any kind whatever—beyond house-breaking!—start herding strayed animals.

Any working-animal breeder knows from positive experience that mental and personality characteristics are strictly heritable. The barbarian is born and bred as well as educated to be a barbarian—and counter-education can offset only the latter factor.

Dear Mr. Campbell:

Philip A. M. Hawley's "Relativity Episode No. 1" in the August Analog is an interesting problem, although it raises no fundamental questions. As he says, the answer is obvious. Both observers will still be in the dark the next morning. But how about the relativistic contraction? The Lorentz transformation requires that when an object and an observer are moving with respect to each other, the observer sees the object contracted along the direction of relative motion. That is, the dimension of the object in the direction of motion appears less to him than to an observer who is stationary with respect to the object.

In order to study what happens, let us add observer 4 who rides a reference frame in uniform motion to the right with respect to the reference

continued on page 91

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the extremist

an editorial by John W. Campbell

In twenty-five years of editing Analog, I have never before done an editorial specifically concerning a current political campaign. Basically, this one doesn't concern a specific campaign either—but the cultural philosophy of the United States as shown by the present campaign.

We've more or less grown up with the lesson of the viciousness of "One-party government" being dinned in our ears, and various Horrible Examples have been shown us. We, here in the United States have been assured, are far, far better off, because we have a two-party system.

Thanks to Barry Goldwater, for the first time in some twenty years, the United States again has a two-party system. Not since Franklin Delano Roosevelt defeated Wendell Willkie has the United States had even a semi-two-party government.

Perhaps the best way to clarify the issue is to consider the basic mechanisms that four billion years or so of animal evolution have worked out, and tested *most* thoroughly. Of course, animal life forms don't have political parties—but they do have sexes. In fact, various life forms have tried no-sex (simple fission), one-sex (the true hermaphroditic creatures such as the earthworm and snail, and many others) two sexes (*"Vive la difference!"*) and, as Dr. Muller, the Nobel Medalist in genetics informed me some years ago, three, four, and even up to *seven* sexes. Not on some weird planet Out There, but right here on Earth.

The no-sex system never got very far—works fine for very simple, very primitive organisms that are not going anywhere of course.

One-sex systems did much better; they evolved such highly complex life systems as that of the earthworm, snail, et cetera.

Some two-sex organisms have pretty well degenerated back to one-sex systems—organisms in which the male is a tiny parasite permanently resident within the body of the female, for example. They progressed to that point, but they don't seem to be going any further.

The polysexual forms, with three or more sexes, never got very far either. Things get a little too complicated when you have to round up a group of five to seven individuals, and work out a coalition government for the divergent interests.

The true two-sex systems have, beyond any peradventure of doubt, taken control of the planet—both the two-sex animals, and the independently evolved two-sex plants have proven the superiority of the two-party system.

The earthworm is a true hermaphrodite; every individual is both a fully-functional male and a fully functional female, yet each individual must find another individual in order to mate. However—the earthworm doesn't face that difficult problem human beings do, of having to bridge a wide gap of nonunderstanding to comprehend his mate. A human male *can't* think like a woman, and a human woman *can't* think like a male; they're so deeply and fundamentally different, from the very nuclei of their individual cells all the way out, that they can't take the exact viewpoint of the other. They are, in consequence, forced to view every problem from two different viewpoints, whether they like it so or not.

The happy little earthworm doesn't have that problem; he can always take exactly the same viewpoint as his mate—because he's just as male (female) as his mate. Agreement comes so much more easily.

The trouble with agreement so easily won is that a one-viewpoint agreement is extremely likely to miss some important factors. Everybody on Earth sees the Moon exactly the same way—and therefore sees only a little more than half the problem. Not until the Russians orbited an automatic camera-satellite out and took a second-viewpoint look at the Moon did we have any idea what the other side of the problem looked like.

Since Franklin Delano Roosevelt and his New Dealers took over the United States, this country has had a two-party system that was, in fact, a one-view point system. Both parties were offering almost exactly the same formula of how-things-should-be—the only difference being that the Democrats claimed they could do it better and quicker, while the Republicans claimed *they* could do it better and quicker. There was no disagreement whatever on what should be done.

There was one and only one view-

continued on page 94

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Photographic plates contain gelatine as well as silver salts. At a British Observatory the gelatine appears to have attracted unusual phenomena inviting even more unusual conclusions.

Invasion by washing water

D. R. BARBER

This article is one of Analog's very few reprint items; it originally appeared in the British photographic journal, **Perspective,** but it has such a very special interest for science-fictioneers that it seemed much too good to miss.

It concerns a phenomenon which is, presumably, fairly wide spread; a bacterium that attacks the gelatine of photographic plates. Many times, the problem is not that a phenomenon is exceedingly rare, but that the conditions required to make the phenomenon noticed are rare. Thus **penicillium notatum** had been growing on culture media for several thousand years before the fact that it produced an antibiotic substance was first noticed.

In that instance, it took an extremely alert, and genuinely scientifically curious man of Dr. Fleming's type. Heinrich Hertz, while performing his experiments with Hertzian waves, was alert enough to observe the photoelectric effect also; he could see more than the one thing he was looking for—and the one-thing-only vision is an all too common weakness of scientists. They see what they set out to see . . . and nothing else! So Dr. Fleming saw more than the bacterial cultures he set out to see . . .

Under what conditions will a photographer be closely concerned with something detectable only under a fifteen diameter enlargement? A few photographers, working with subminiature cameras, make some 15X enlargements but then they select only their fortunately extra-good negatives. If a negative should

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have a few dust spots, scratches, or pinholes, they cuss mildly and either select some other negative, or do a little retouching on the print. They don't get a microscope and examine the negative to find out that a bacterial invasion is the cause of the pinhole.

Most technical photography is done under excellent laboratory conditions, and low magnification is normally all that's wanted.

Only an astronomer really has to use high magnification of every square millimeter of his plates—and can't overcome minor defects by retouching the prints! And when a man has spent from one to a dozen hours patiently guiding a telescope to get the critical spectroscopic data he is seeking, he does **not** peaceably accept that Fate was unkind in lousing up the spectrum he sought. He's going to study the problem and see it damn well doesn't happen again.

Astronomical observatories, also, unlike more usual scientific institutions, are not located in convenient places; they specialize in remote and inconvenient locations, away from industrial smogs and lights—and technical facilities like clean water.

Now "pure water" is a queer sort of concept. Transistor makers require ion-free "conductivity water," but, of course, they wouldn't mind a bit if it contained a fantastically lethal one part in a billion of botulin toxin, or was, in a health-scientist's terms, "crawling with cholera." The health scientist considers water fine when it's saturated with calcium and magnesium bicarbonate, has a strong odor of hydrogen sulphide, corrodes out any boiler it doesn't first clog up with scale, and has enough free chlorine in it to chew pits in stainless steel. Just so long as it doesn't contain any living organisms.

And a thirsty man, in Kipling's immortal words, doesn't really mind if "it was crawling and it stunk", or has some sand and mud in it, and college kids have demonstrated that a goldfish or two won't render it undrinkable.

For photographic purposes, well-filtered water, freed of sand, mud and the like, and preferably free of calcium and magnesium salts—they tend to precipitate and form scums with the photographic chemicals—is fine.

You see, one of the reasons silver has remained so strongly dominant in photography is that even minute traces of silver salts are remarkably effective bactericides; normally, bacterial contamination doesn't cause any trouble in the heavily silver-loaded photographic gelatines. Normally, that is, and with respect to Terrestrial bacteria . . .

After reading this article, it's worth asking "What's the use of sterilizing those space-probes we send out!"

[The Editor]

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In these days of carefully standardized development and lavishly equipped darkrooms supplied with sterilized mains water, spoilage of photographic material during processing is negligible. In particular, damage to plates, films, or papers caused by bacterial contamination of the water-supply is almost unheard of.

Against such a background the mysterious series of bacterial "events" that occurred at the Norman Lockyer Observatory, Sidmouth, between the years 1937 and 1961 may well raise remarkable questions.

At this hill station in S.E. Devon, England, some 600 feet above sea-level, no mains water-supply is available. Formerly the sole supply for photographic purposes was of rain-water collected from the roofs and cupolas of the observatory buildings. But since 1938, spring water, pumped from low-level collecting pits and filter-bed to a high-level storage tank near the main buildings, has replaced the rain-water supply entirely. On this account alone, processing conditions at the observatory would be regarded as primitive, judged by modern commercial standards.

The Sidmouth Events, 1937-1961

In this 25-year period, no less than six unique events were observed at intervals ranging from I to II years. Each was marked by the unexpected appearance in rain and spring water of very large concentrations of an extremely rapid gelatine-liquefying organism. When present at maximum concentration, this micro-organism caused major damage to photographic material during the brief interval (¾-1 hr.) between washing and drying the processed plates, or films. The liquefaction of the gelatine base was so rapid that its progress could often be followed visually.

The plate defects produced by the micro-organism were characteristic for each of the outbreaks, namely a distinct "pitting" of the gelatine/silver layer, with clearing of the silver grains at the centre of each pit and their redistribution around its walls. This resulted in a relatively clear and nearly circular spot surrounded by a narrow zone of higher photographic density. Individual pits varied in diameter from about 0.05 to 0.25 mm. On a severely attacked plate scores of these tiny defects might be visible under low (x 15) magnification, and at higher magnifications a detailed structure could be discerned.

The first appearance of the unusual micro-organisms occurred in the summer of 1937, and activity continued into the autumn of that year. As a result, a total of 32 photographic records of stellar spectra, and other astronomical objects, was damaged to an extent that made them useless for accurate measurement. A recrudescence of activity followed in each of the summers of 1938, 1939 and 1940, and further plate damage resulted, though on a smaller scale. By 1941, all signs of the ultra-rapid liquefying organisms had ceased; only the indigenous slow-acting *(Bacillus fluorescens)* organisms now remained. (These local micro-organisms are quite incapable of liquefying photographic gelatine under normal processing conditions, even when present in high concentrations.)

Subsequent to this first event the precaution was taken to discontinue the use of rain-water (collected off the cupola roofs) in processing photographic material, a practice followed from the observatory's inception.

Further Outbreaks

No further trouble from bacterial activity was experienced until, quite suddenly in September 1948, a batch of negatives again showed unmistakable signs of attack similar to those occurring in 1937-1941. Because of a rapid fall in both air, and water temperatures towards the end of the month, the outbreak was short-lived; and by the end of October activity had died out. However, this brief vent produced a level of attack of similar magnitude to that observed during the first "invasion."

Following the 1948 outbreak, the further precaution was taken of disinfecting all water used for photographic purposes. Since this procedure made the detection of subsequent outbreaks from plate examination virtually impossible, a routine water-sampling programme was initiated. The tests were designed specifically to isolate the ultra-rapid liquefying organisms, if present in the raw water-supply—they were carried out at the Area Laboratories of the National Agricultural Advisory Service, Ministry of Agriculture, Fisheries and Food. For the separate identification of both abnormal, and normal strains, samples were incubated at 15°C on nutrient gelatine, and "spot" counts made after 24 and 48 hours respectively after inoculation.

Another long period of bacterial inactivity now ensued, and not until July 1956 did the third event suddenly occur. This outbreak developed very rapidly, and it was again marked by a very high degree of bacterial activity which, however, had died out by the beginning of August. It was notable as being the first occasion on which the unusual water-borne liquefiers were accompanied in both early, and late stages of the event by a very high concentration of air-borne "yeast-like" organisms also capable of rapidly attacking exposed and moist gelatine plates. In point of fact the air-borne organisms easily out-numbered the water type; and it was from the presence of the former that major plate damage resulted. This outbreak was revived, with a second sharp peak of activity, in the late summer of 1957.

A fourth short-lived invasion of water-borne organisms was noted in May 1958, and, in 1959, a fifth event —with two distinct spells of activity occurred. The first of these was in the summer months and was short-lived; whilst the second (autumnal) outbreak lasted longer. In both, the concentration of ultra-rapid liquefiers was

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low. No major damage to photographic material deliberately exposed to attack was noted.

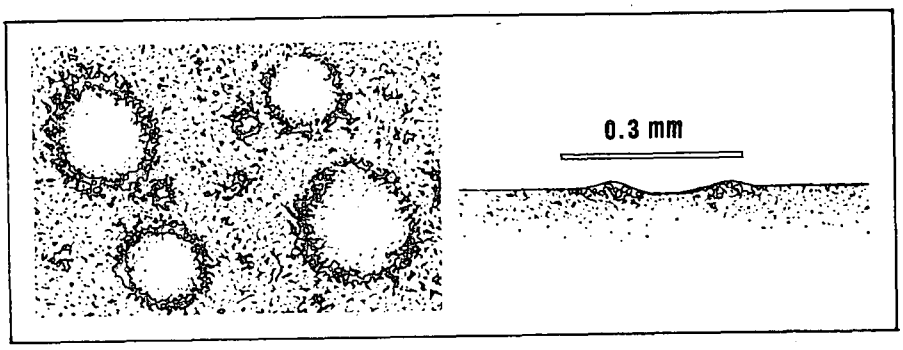
A sixth event—the last of the series of major outbreaks—appeared in the summer of 1961. Activity was moderately intense, although short-lived, and limited once again to water-borne micro-organisms.

Bacteriological Investigations

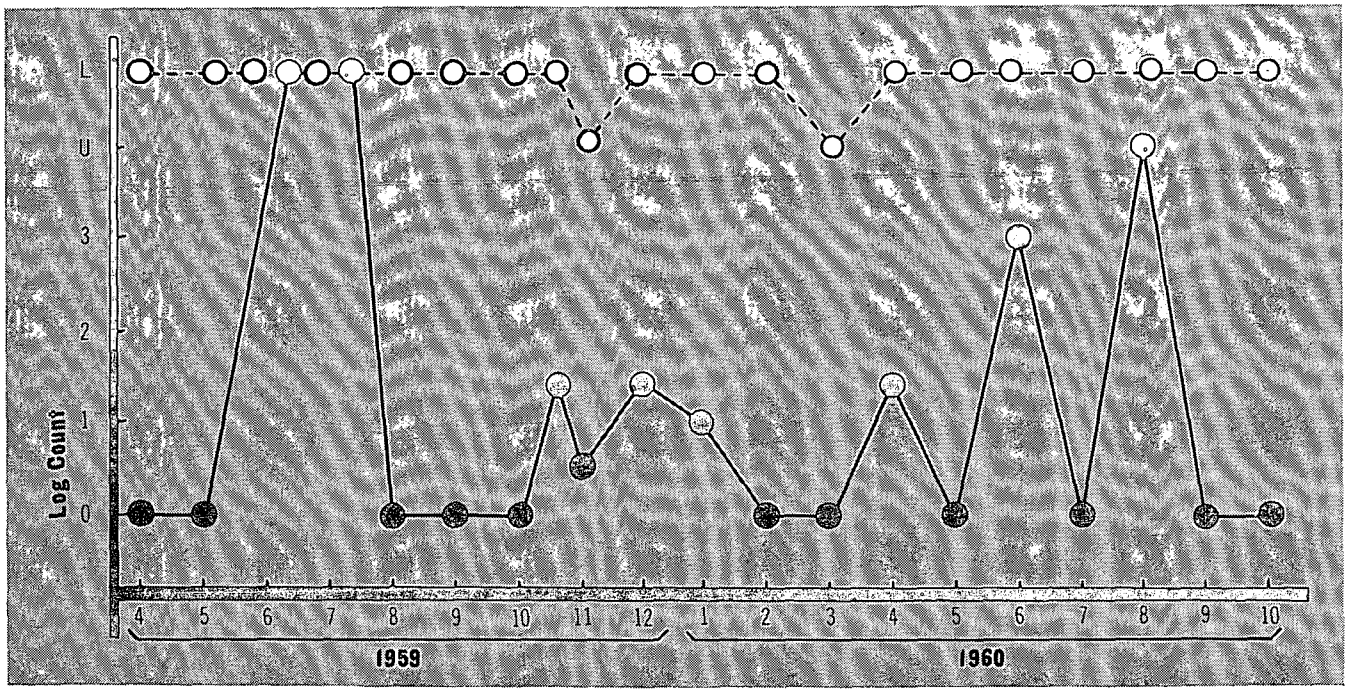
The potency and rapidity of attack shown by the micro-organisms associated with each of the six events just described together with their intermittent appearance in the local fresh-water supply, made it obvious that the organisms responsible for the damage to photographic material represented a species or strain quite different from that indigenous to the locality.

Moreover, their presence in the photographic plate defects had been confirmed quite early in the investigation by direct staining of the damaged area with weak methylene blue. This simple test revealed the gelatine-liquefying activity to be of a bacillary nature, as was later confirmed microscopically and culturally.

Subsequent to these earlier tests, numerous attempts at identification, some successful and others not so, were commenced in the summer of 1937, continuing thereafter as opportunity availed. Following the 1937 outbreaks, initial studies of the micro-organism were made by the members of the Ministery of Agriculture, Fisheries and Food staff at Seale Hayne Agricultural College, Newton Abbot. These were later transferred to the National Agricultural Advisory Service Laboratories, Staplake Mount, Starcross. The various tests applied clearly demonstrated the intermittent



Bacterial Action Patterns. After attack by the ultra rapid gelatine liquefying micro organisms, a processed emulsion showed typical crater like rings with an eroded central zone (left). The crater structure is also visible in a transverse section through a single defect (right)—here at a magnification of about 70×. Silver grains removed from the central areas amass at the edges of the "crater".



Plots of log counts of gelatine liquefiers recorded during 1959 and 1960 outbreaks. The white circles represent the normal strain (48 hour incubation period) and the black points the ultra rapid strain (24 hour incubation). The level L represents complete liquefaction, the level U partial liquefaction where no count is possible.

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presence in the observatory's water-supply of a phenomenally-rapid liquefying strain of *Bacillus (Pseudomonas) fluorescens liquefaciens*, typed independently by the Lister Institute, and hitherto unrecognized in terrestrial fresh-water types. Because of its extremely rapid action on moist gelatine, and also its complete tolerance of very high concentrations of the normally toxic silver salts[1], the bacterium did not conform with the behavior pattern already known for the normally-present fresh-water liquefiers.

Later (in 1948), identical organisms were isolated both from water samples and from sections of processed photographic emulsion. From these, pure cultures were successfully obtained, and typed. The results confirmed the 1937 findings, namely, that the responsible bacterium was of quite abnormal type.

Further field work and laboratory tests followed the events of 1956 and 1958 with the assistance of members of the Dairy Bacteriology, and Veterinary Investigation Service staffs at Staplake Mount, Starcross.

Air-Borne Organisms

The 1956 invasion followed a somewhat different pattern to that observed in 1937, and 1948. On this occasion the appearance of the ultra-rapid liquefying organisms in the water-supply was preceded (approx. 4 days) by an invasion of extremely rapid air-borne liquefiers having a yeast-like structure. These were first detected in a sample of rain-water collected on July 19. Subsequent to this date very large numbers of the yeast-like organisms were present in the air throughout the main building of the observatory. Exposed nutrient gelatine plates were attacked with great rapidity, and numerous defects in all respects similar to those observed before appeared. The same yeast-like organisms were later found, along with the ultra-rapid *B. fluorescens* type, in water samples taken daily from July 23 to 25. The highest concentration of air-borne contamination was noted between July 25 and 27. Nutrient gelatine plates exposed in the laboratory on these dates were visibly attacked within 20 minutes of exposure, and completely liquefied within an hour. By July 31, the air-borne organisms had disappeared, although water samples continued to indicate their presence up to mid-September. By the end of that month the first phase of the attack was over. A second period of reduced activity commenced in late July 1957, continuing until the end of October.

Several attempts were made at Starcross to propagate pure cultures of the yeast-like organism, but none was successful. It was not possible, therefore, to identify the responsible species.

In the remaining events of 1959/1961, activity, as demonstrated by the liquefaction tests, was again confined to water-borne *B. fluorescens* type organisms: no further invasions of air-borne micro-organisms have been observed.

One further point remains to be discussed. Of the six events reported, Nos. 1, 3 and 5 showed a revival of bacterial activity in the summer months of the year following the primary invasion. This fact may possibly be of fundamental importance in any attempt to establish the origin of the "foreign" micro-organisms, for it is known that the indigenous fresh-water strain of *B. fluorescens* is not a spore-forming organism. Any carry-over of activity from one season to the next will thus be unexpected. Hence, from the repeated occurrence of multi-peaked outbreaks of bacterial activity in the three events the particular organism in question was probably either a spore-forming, or other-wise highly-resistant strain. Though closely resembling *B. fluorescens* under the microscope, the abnormal liquefier differed from it in several important aspects. This conclusion will again be referred to in a later section.

A plot of log concentration versus date for both normal, and ultra-rapid liquefying organisms during the severe outbreak that commenced from June 1959 onwards (page 11), shows two distinct periods of enhanced activity, namely June-September 1959, and July—August 1960, when the concentration of the abnormal micro-organisms was so high as to be uncountable on culture plates incubated for the standard period of 24 hours. By contrast, during the whole period, the concentration of the indigenous strain of *B. fluorescens* remained remarkably constant.

Where Do They Come From?

The factual evidence already presented raises several very pertinent questions:

—Is the observed activity of this abnormal liquefier wholly consistent with that expected from a study of known terrestrial strains?

—Why do these micro-organisms show such high tolerance to toxic silver salts in sharp contrast to the reactions of known types?

—If the bacteria are indeed extra-terrestrial, what is the likely source?

An American suggestion that the virus responsible for endemic influenza outbreaks emanated from the planet Venus, led to a fresh examination of the 1937/1948 Sidmouth data, and also to a search among the large collection of spectrograms obtained at Sidmouth prior to 1937 for earlier evidence of bacterial attack. As a result of the latter, two earlier outbreaks—one probable event in 1930, and a second well-determined occasion in 1932—were discovered.

Next, all the available data was analyzed in relation to solar activity, and planetary configurations, in particular those of Venus. The results were so unexpected that it was thereupon decided to await further experimental data before attempting any possible explanation. However, a prediction based on the preliminary analysis, that a particularly favourable occasion would fall in the sum-

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mer of 1956, given a near dated geomagnetic storm, was fulfilled by the event of July 23. And, as it transpired, no less than five more outbreaks were recorded between 1948 and 1961. Thus it has been possible to extend the original analysis to include this additional evidence.

The final results are summarized in the table below. They amply support the conclusions reached from the preliminary investigation, namely that *each recorded presence of the abnormal micro-organisms* in the local water-supply, or on processed photographic material, *coincided* (with a single unconfirmed exception) *closely in date with an inferior conjunction of Venus and a major geomagnetic storm*. Data for the six major events summarized in the table on page 93.

This remarkable association of events appears all the more striking when it is realized that, of a total of nine bacterial invasions between 1922 and 1961, only one instance of a suspected outbreak (limited to a single affected spectogram, with one doubtful defect) fell close in date to an inferior conjunction unaccompanied by a near-dated geomagnetic storm.

By contrast, there were no less than seven occasions in this period when, with equally close conjunction and storm dates, no outbreak of bacterial activity followed. However, this apparent paradox may be readily resolved, without recourse to ad hoc assumptions, from a consideration of the relevant astronomical data.

The planet Venus has a synodic period[2] of 1.6 years. Thus between every fifth similar conjunction an interval of almost 8 years will elapse. In consequence, the dates of either inferior, or superior conjunctions fall naturally into five distinct sequences with all dates in each sequence occurring at approximately the same time of year. Three of these sequences (Nos. 1, 4 and 5) are associated with autumn and winter months, while two (Nos. 2 and 3) fall in spring and summer. Thus the latter may be expected to favour a bacterial event if only because weather and temperature conditions at such times are likely to be more favourable. Indeed, it would seem that the prevalent meteorological pattern for the locality will be of major importance in determining whether or not an outbreak is likely to occur. That this is so is confirmed by the observations, since of the seven occasions when an outbreak was imminent but did not occur, none fell in the spring and summer months. Moreover, local weather conditions preceding each of the six major events exhibited a similar pattern marked by a period of precipitation immediately prior to the onset of bacterial activity, and a wind direction which remained predominantly northerly during the interval between geomagnetic storm and bacterial events.

This latter observation suggests that a northerly surface air-stream is required to transport the air-borne micro-organisms to the locality whence they are brought to ground by rainfall. Indeed, this is what might be expected if the "foreign" bacteria are initially injected into the earth's upper atmosphere together with the solar particles that, at such times, enter the auroral belt some 800 miles north of southwest England. Furthermore, the observed mean interval of time between storm and bacterial events, namely 55 days (page 93) is compatible with a drift velocity for the cloud of bacteria of about 15 miles per day—a value sufficiently realistic to support the above hypothesis.

The Validity of Speculation

Much of what has already been said—notably the suggested mode of transporting the cloud of bacteria from Venus to the earth via a solar particle stream—is highly speculative. Nevertheless, it is to the credit of the suggestions just made that the observed facts—presented here it is believed for the first time—are not inconsistent with the idea of an extra-terrestrial origin of the "foreign" micro-organisms.

Even so, whilst it is not impossible that these strange bodies come from somewhere outside of the earth or its

Coincidence of Conjunctions, Geomagnetic Storms and Bacterial Events

Sequence 1		2		3		4		5	
Date	Events	Date	Events	Date	Events	Date	Events	Date	Events
7/2/1926	g	20/4/1929	—	1/7/1924	—	10/9/1927	g	24/11/1922	—
5/2/1934	(b)	18/4/1937	g, b	29/6/1932	g, b	8/9/1935	g	22/11/1930	g (b)
2/2/1942	—	15/4/1945	—	26/6/1940	g, b	6/9/1943	g	20/11/1938	—
31/1/1950	g	13/4/1953	g, b	24/6/1948	g, b	3/9/1951	g (b)	17/11/1946	—
28/1/1958	g, b	10/4/1961	g, b	21/6/1956	g, b	1/9/1959	g, b	15/11/1954	—

The dates are inferior conjunctions of Venus (the planet lying between Sun and Earth).
g=concurrent geomagnetic storm; (b)=suspected bacterial event; b=confirmed bacterial event.

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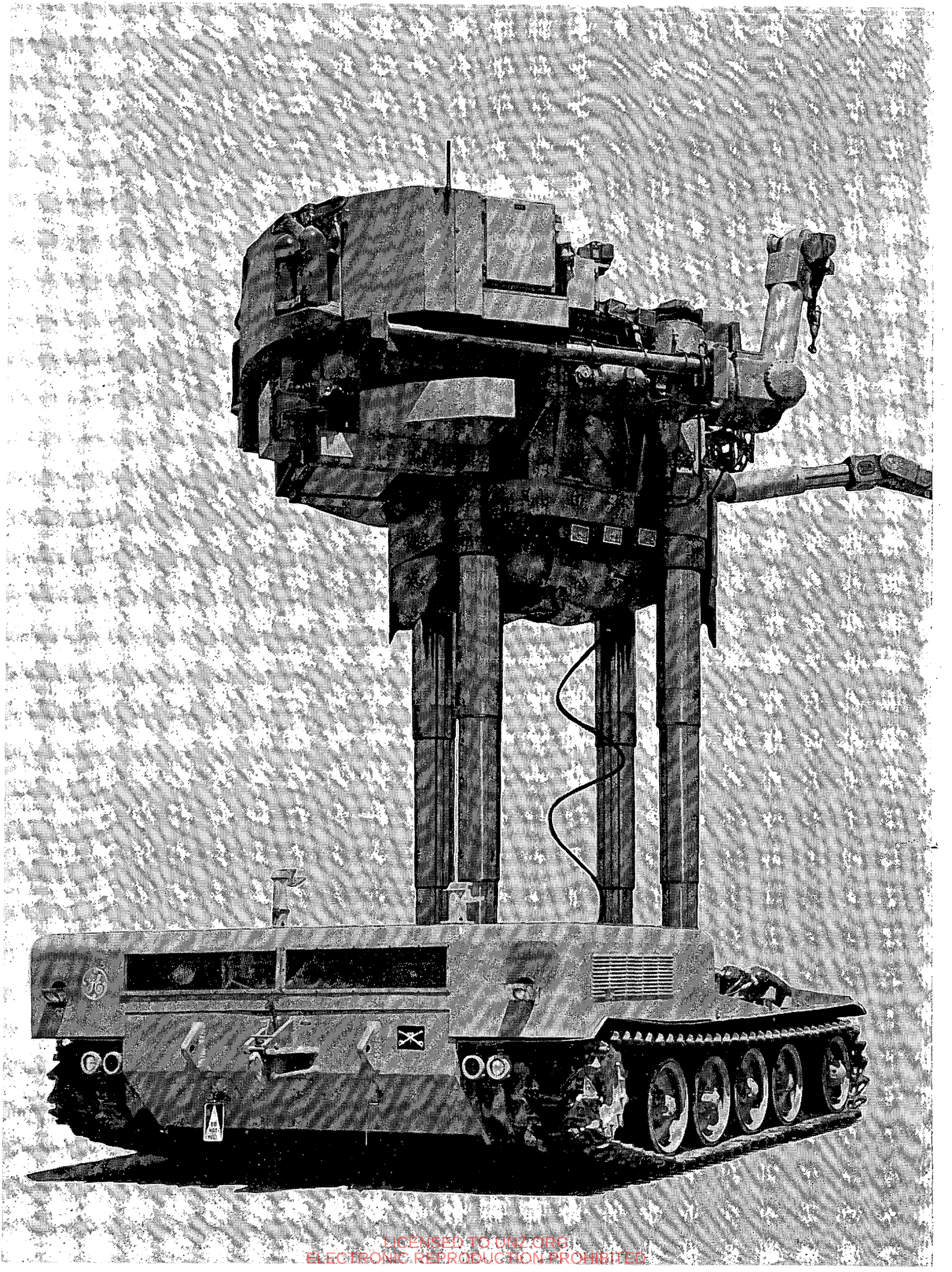

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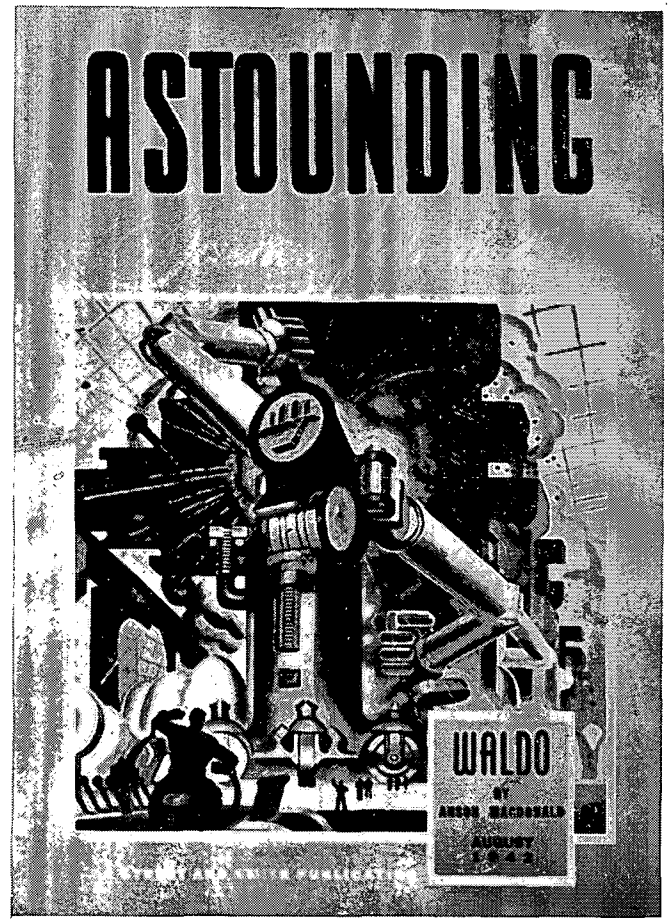
Waldo goes to work



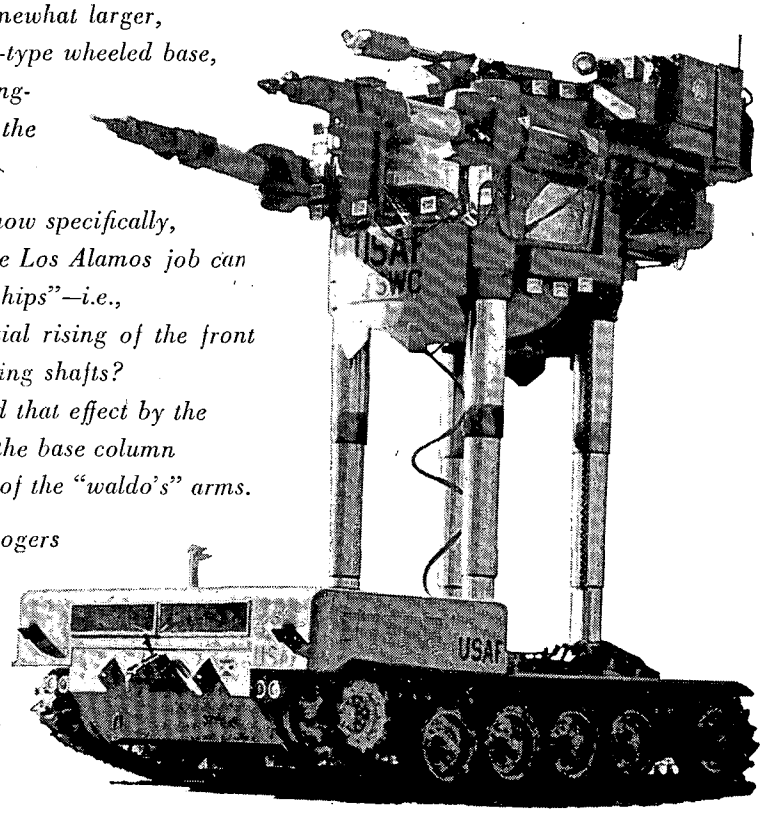
Back in 1942, when Anson MacDonald —also known as Robert A. Heinlein—dreamed up the "waldo," it was primarily intended as a remote manipulator for changing the scale of human strength and size—either to allow a man to do giant-size manipulation, or insect-size work.

The actual remote-controlled "waldos" first came into use for remote-controlled manipulation in environments no living being could tolerate—usually the "hot labs" at nuclear research stations.

But Heinlein's basic concept is being fulfilled, too—the Los Alamos Scientific Laboratory has developed and is using a giant-scale "waldo" that bears a remarkable resemblance to the device Hubert Rogers pictured on the 1942 cover he did for the original story "Waldo." The Rogers device is somewhat larger, and mounted on a caster-type wheeled base, and doesn't have the rising-lowering convenience of the Los Alamos version.

The photographs don't show specifically, and I wonder whether the Los Alamos job can "bend forward from the hips"—i.e., tilt forward—by differential rising of the front and rear pair of telescoping shafts? Rogers' "waldo" achieved that effect by the "knuckle joint" between the base column and the "shoulder joint" of the "waldo's" arms.

Anyhow—Heinlein and Rogers both earn kudos for good predicting!



LOS ALAMOS
SCIENTIFIC LABORATORIES

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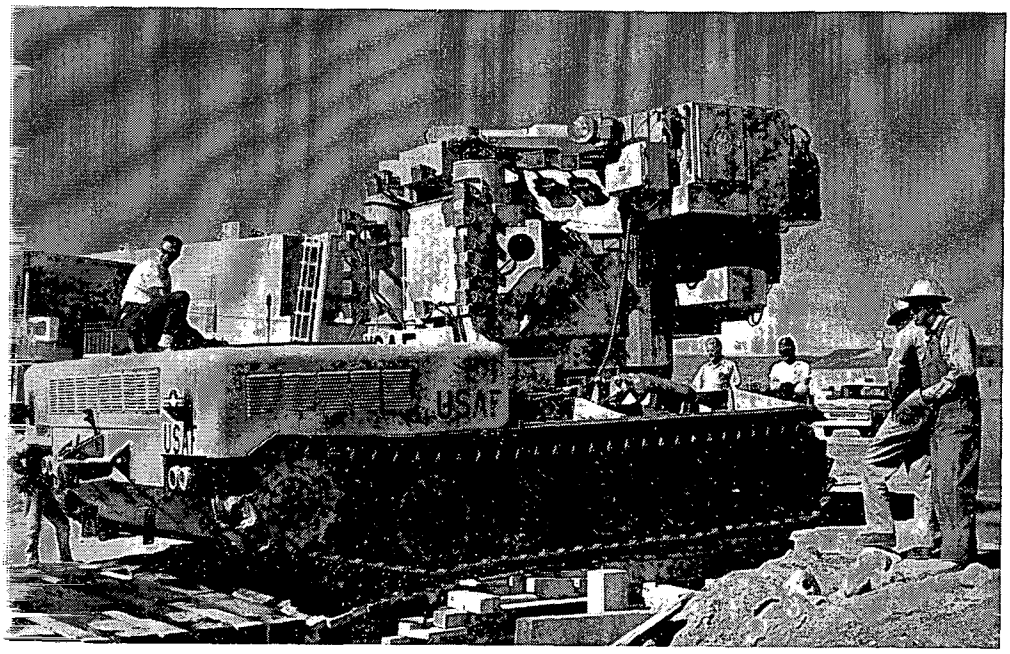
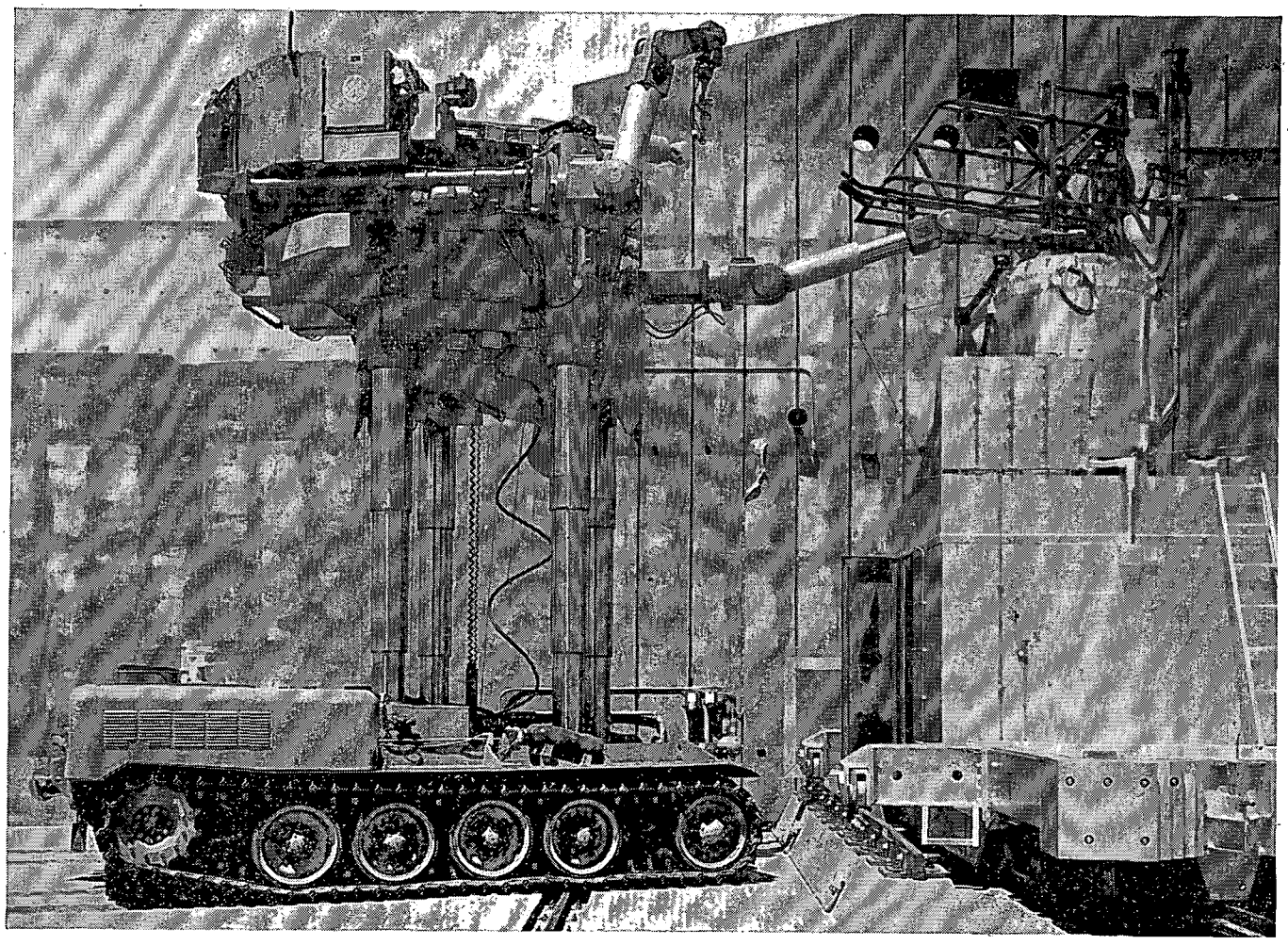


LOS ALAMOS SCIENTIFIC LABORATORIES



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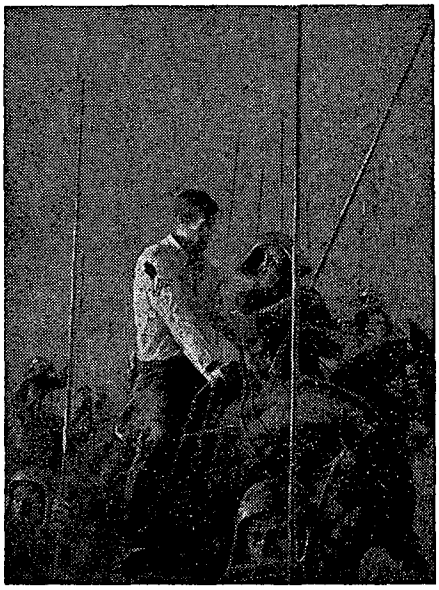
GUNPOWDER GOD | H. BEAM PIPER

Sometimes the Paratime transporters slipped . . . and then a whole new branch of history was sure to start! But for Corporal Calvin of the Pennsylvania State Police that slip was labeled "Opportunity" in large letters . . .



Tortha Karf, Chief of Paratime Police, told himself to stop fretting. Only two hundred odd days till Year-End Day, and then, precisely at midnight, he would rise from this chair and Verkan Vall would sit down in it, and after that he would be free to raise grapes and lemons and wage guerrilla war against the rabbits on the island of Sicily, which he owned on one uninhabited Fifth Level time-line. He wondered how long it would take Vall to become as tired of the chief's seat as he was now.

Vall was tired of it already, in anticipation. He'd never wanted to be chief; prestige and authority meant little to him, and freedom much. It was a job somebody had to do, though, and it was the job for which he had been trained, so Vall would take it, and do it, he suspected, better than he himself had done. The job, policing a near-infinity of different worlds, each one of which was this same planet, Earth, would be safe in the hands of Verkan Vall.

Twelve thousand years ago, facing extinction on an exhausted planet, the First Level race had discovered the existence of a second, lateral, dimension of time, and a means of physical transposition to and from the worlds of alternate probability parallel to their own. So the conveyers had gone out by stealth, to bring back wealth in abundance to First Level Home Time-Line, a little from here, a little from there, never enough to be missed.

It all had to be policed. Some Paratimers were unscrupulous in dealing with outtime peoples—he'd have retired five years ago, but for the discovery of a huge paratemporal slave trade, only recently smashed. More often, by somebody's bad luck or indiscretion, the Paratime Secret would be endangered, and that had to be preserved at any cost. Not merely the technique of paratemporal transposition, that went without comment, but the very existence of a race possessing it. If for no other reason, and there were many others, it would be utterly immoral to make any outtime people live with the knowl-

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edge that there were among them aliens indistinguishable from themselves, watching and exploiting. So there was the Paratime Police.

Second Level; it had been civilized almost as long as the First, but there had been long Dark-Age interludes. Except for paratemporal transposition, it almost equaled First. Third Level civilization was more recent, but still of respectable antiquity. Fourth Level had started late and advanced slowly; some Fourth Level genius was inventing agriculture when the coal-burning steam engine was obsolescent on the Third. And Fifth Level—on a few time-lines, subhuman brutes, fireless and speechless, were using stones to crack nuts and each other's head; on most of it nothing even humanoid had evolved.

Fourth Level was the big one. The others had devolved from low-probability genetic accidents; Fourth had been the maximum probability. It was divided into many sectors and subsectors, on most of which civilization had first appeared in the Nile and Tigris-Euphrates valleys, and, later, on the Indus and the Yangtze. Europo-American Sector; they might have to pull out of that entirely, that would be Chief Verkan's decision. Too many thermonuclear weapons and too many competing national sovereignties, always a disaster-fraught combination. That had happened all over Third Level within Home Time-Line experience. Alexandrian-Roman, off to a fine start with the pooling of Greek theory and Roman engineering ability, and then, a thousand years ago, two half-forgotten religions had been rummaged out of the dustbin and their respective proselytes had begun massacring each other. They were still at it, with pikes and matchlocks, having lost the ability to make anything better. Europo-American would come to that, if its competing politico-economic sectarians kept on. Sino-Hindic, that wasn't a civilization, was a bad case of cultural paralysis. Indo-Turanian, about where Europo-American had been a thousand years ago.

And Aryan-Oriental; the Aryan migration of three thousand years ago, instead of moving west and south as on most sectors, had rolled east into China.

And Aryan-Transpacific, there was one to watch. An offshoot of Aryan-Oriental; the conquerors of Japan had sailed north and east along the Kuriles and Aleutians, and then spread south and east over North America, bringing with them horses and cattle and iron-working skills, exterminating the Amerinds, splitting into diverse peoples and cultures. There was a civilization along the Pacific coast, and nomads on the plains herding bison and cross-breeding them with Asian cattle, another civilization in the Mississippi Valley, and one around the Great Lakes. And a new one, only four centuries old, on the Atlantic seaboard and back in the Appalachians.

The technological level was about that of Europe in the Middle Ages, a few subsectors slightly higher. But they were going forward. Things, he thought, were about ripe to happen on Aryan-Transpacific.

Well, let Chief Verkan watch that.

She tried to close her mind to the voices around her, and stared at the map between the two candlesticks on the table. There was Tarr-Hostigos overlooking the gap, just a tiny fleck of gold on the parchment, but she could see it all in her mind, the walls, the outer bailey, the citadel and the keep, the watchtower pointing a blunt finger skyward. Below, the little Darro glinted, flowing north to join the Listra and, with it, the broad Athan to the north and east. The town of Hostigos, white walls and slate roofs and busy streets; the checkerboard of fields and forests.

A voice, louder and harsher than the others, brought her back to reality.

"He'll do nothing? What in Dralm's name is a Great King for but to keep the peace?"

She looked along the table, from one to another of them. The speaker for the peasants, at the foot, uncomfortable in his feast-day clothes and ill at ease seated among his betters, the speakers for the artisans and the merchants and the townsfolk, the lesser family members, the sworn landholders. Chartiphon, the captain-in-chief, his blond beard streaked with gray like the gray lead-splashes on his gilded breastplate, his long sword on the table in front of him. Old Xentos, the cowl of his priestly robe thrown back from his snowy head, his blue eyes troubled. And her father, Prince Ptosphes of Hostigos, beside whom she sat at the table-head, his mouth tight between pointed mustache and pointed beard. How long it had been since she had seen a smile on her father's lips!

Xentos passed a hand negatively in front of his face.

"The Great King, Kaiphranos, said that it was every prince's duty to guard his own realm; that it was for Prince Ptosphes to keep raiders out of Hostigos."

"Well, great Dralm, didn't you tell him it wasn't just bandits?" the other voice bullyragged. "They're Nostori soldiers; it's war! Gormoth of Nostor means to take all Hostigos, as his grandfather took Sevenhills Valley after the traitor we don't name sold him Tarr-Dombra!"

That was a part of the map her eyes had shunned, the bowl valley to the east, where Dombra Gap split the mountains. It was from thence the Nostori raiders came.

"And what hope have we from Styphon's House?" her father asked. He knew the answer; he wanted them all to hear it at first hand.

"Chartiphon spoke with them," Xentos said. "The priests of Styphon hold no speech with priests of other gods."

"The archpriest wouldn't talk to me," Chartiphon said. "Only one of the upper priests. He took our offerings and said that he would pray to Styphon for us. When I asked for fireseed, he would give us none."

"None at all?" somebody cried. "Then we are under the ban!"

Her father rapped with the pommel of his poignard.

"You've heard the worst, now," he said. "What's in your minds to do? You first, Phosg."

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The peasant leader rose awkwardly, cleared his throat.

"Lord, my cottage is as dear to me as this fine castle is to you," he said. "I'll fight for mine as you would for yours."

There was a quick mutter of approval along the table. The others spoke in their turns, a few tried to make speeches. Chartiphon said only: "Fight. What else?"

"Submission to evil is the worst of all sins," Xentos said. "I am a priest of Dralm, and Dralm is a god of peace, but I say, fight with Dralm's blessing."

"Rylla?" her father asked.

"Better die in armor than live in chains," she said. "When the time comes, I will be in armor with the rest of you."

Her father nodded. "I expect no less from any of you." He rose, and all with him. "I thank you all. At sunset, we dine together; until then, servants will attend you. Now, if you please, leave me with my daughter. Xentos, you and Chartiphon stay."

There was a scrape of chairs, a shuffle of feet going out, a murmur of voices in the hall before the door closed. Chartiphon had begun to fill his stubby pipe.

"Sarrask of Sask won't aid us, of course," her father said.

"Sarrask of Sask's a fool," Chartiphon said shortly. "He should know that when Gormoth's conquered Hostigos, his turn will come next."

"He knows it," Xentos said calmly. "He'll try to strike before Gormoth does. But even if he wanted to, he'd not aid us. Not even King Kaiphranos dares aid those whom the priests of Styphon would destroy."

"They want that land in Wolf Valley, for a temple farm," she said slowly. "I know that would be bad, but—"

"Too late," Xentos told her. "Styphon's House is determined upon our destruction, as a warning to others." He turned to her father. "And it was on my advice, Lord, that you refused them."

"I'd have refused against your advice. I swore long ago that Styphon's House should never come into Hostigos while I lived, and by Dralm neither shall they! They come into a princedom, they build a temple, they make a temple farm, and make slaves of the peasants on it. They tax the prince, and force him to tax the people till nobody has anything left. Look at that temple farm in Sevenhills Valley."

"Yes, you'd hardly believe it," Chartiphon said. "They make the peasants on the farms around cart in their manure, till they have none left for their own fields. Dralm only knows what they do with it." He puffed at his pipe. "I wonder why they want Wolf Valley."

"There's something there that makes the water of those springs taste and smell badly," she considered.

"Sulfur," Xentos said. "But why do they want sulfur?"

Corporal Calvin Morrison, Pennsylvania State Police, crouched in the brush at the edge of the old field and looked across the brook at the farmhouse two hundred yards away, scabrous with peeling yellow paint and festooned by a sagging porchroof. A few white chickens pecked disinterestedly in the littered barnyard; there was no other sign of life, but he knew that there was a man inside. A man with a rifle, who would use it; he had murdered once, broken jail, would murder again.

He looked at his watch; the minute hand was squarely on the nine. Jack French and Steve Kovac would be starting down from the road above where they had left the car. He rose, unsnapping the retaining-strap of his holster.

"I'm starting. Watch that middle upstairs window."

"I'm watching," a voice behind assured him. A rifle action clattered softly as a cartridge went into the chamber. "Luck."

He started forward across the weed-grown field. He was scared, as scared as he'd been the first time, back in '52 in Korea, but there was nothing to do about that. He just told his legs to keep moving, knowing that in a few moments he wouldn't have time to be scared. He was almost to the little brook, his hand close to the butt of his Colt, when it happened.

There was a blinding flash, followed by a moment's darkness. He thought he'd been shot; by pure reflex, the .38-special was in his hand. Then, all around him, a flickering iridescence of many colors glowed, in a perfect hemisphere thirty feet across and fifteen high, and in front of him was an oval desk or cabinet, with an instrument panel over it, and a swivel chair from which a man was turning and rising. Young, well-built; wore loose green trousers and black ankle boots and a pale green shirt; a shoulder holster under his left arm, a weapon in his hand.

He was sure it was a weapon, though it looked more like an electric soldering iron, with two slender metal rods instead of a barrel, joined at the front in a blue ceramic knob. It was probably something that made his own Official Police look like a kid's cap pistol, and it was coming up fast to line on him.

He fired, holding the trigger back to keep the hammer down on the fired chamber, and threw himself down, hearing something fall with a crash, landing on his left hand and his left hip and rolling, until the nacreous dome was gone from around him and he bumped hard against something. For a moment, he lay still, then rose to his feet, letting out the trigger of the Colt.

What he'd bumped into was a tree. That wasn't right, there'd been no trees around, nothing but brush. And this tree, and the others, were huge, great columns rising to support a green roof through which only stray gleams of sunlight leaked. Hemlocks, must have been growing here while Columbus was conning Isabella into hocking her jewelry. Come to think of it, there was a stand of trees like this in Alan Seeger Forest. Maybe that was where he was.

He wondered how he was going to explain this.

"While approaching the house," he began aloud and

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in a formal tone, "I was intercepted by a flying saucer, the operator of which threatened me with a ray pistol. I defended myself with my revolver, firing one round—"

No. That wouldn't do, at all.

He swung out the cylinder of his Colt, ejecting the fired round and replacing it. Then he looked around, and started in the direction of where the farmhouse ought to be, coming to the little brook and jumping across.

Verkan Vall watched the landscape flicker outside the almost invisible shimmer of the transportation field. The mountains stayed the same, but from one time-line to another there was a good deal of randomness about which tree grew where. Occasionally there were glimpses of open country and buildings and installations, the Fifth Level bases his people had established. The red light overhead winked off and on, and each time it went off, a buzzer sounded. The dome of the conveyer became a solid iridescence, and then a cold, inert metal mesh. The red light came on and stayed on. He was picking up the sigma-ray needler from the desk in front of him and holstering it when the door slid open and a lieutenant of Paratime Police looked in.

"Hello, Chief's Assistant. Any trouble?"

In theory, the Ghaldron-Hesthor transposition field was impenetrable from the outside, but in practice, especially when two conveyers going in opposite paratemporal directions interpenetrated, it would go weak, and outside objects, sometimes alive and hostile, would intrude. That was why Paratimers kept weapons at hand, and why conveyers were checked immediately on emergence; it was also why some Paratimers didn't make it home.

"Not this trip. My rocket ready?"

"Yes, sir. Be a little delay about an aircar for the rocketport." The lieutenant stepped inside, followed by a patrolman, who began taking the transportation record tape and the photo-film record out of the cabinet. "They'll call you when it's in."

He and the lieutenant strolled outside into the noise and color of the conveyer-head rotunda. He got out his cigarette case and offered it; the lieutenant flicked his lighter. They had only taken a few first puffs when another conveyer quietly materialized in a vacant space nearby. A couple of Paracops strolled over as the door opened, drawing their needlers. One peeped inside, then holstered his weapon and snatched a radio phone from his belt; the other entered cautiously. Throwing away his cigarette, he strode toward the newly arrived conveyer, the lieutenant following.

The chair was overturned; a Paracop, his tunic off and his collar open, lay on the floor, a needler a few inches from his outstretched hand. His shirt, pale green, was dark with blood. The lieutenant, without touching him, looked at him.

"Still alive," he said. "Bullet, or sword-thrust?"

"Bullet; I can smell nitro powder." Then he saw the hat lying on the floor, and stepped around the fallen man. Two men were coming in with an antigrav stretcher; they and the patrolmen got the wounded man onto it. "Look at this, lieutenant."

The lieutenant glanced at the hat. It was gray felt, wide-brimmed, the crown peaked with four indentations.

"Fourth Level," he said. "Europo-American."

He picked it up, glancing inside. The sweatband was lettered in gold, JOHN B. STETSON COMPANY. PHILADELPHIA, PA., and, hand-inked, *Cpl. Calvin Morrison. Penna. State Police,* and a number.

"I know that outfit," the lieutenant said. "Good men, every bit as good as ours."

"One was a split second better than one of ours." He got out his cigarette case. "Lieutenant, this is going to be a real baddie. This pickup's going to be missed, and the people who'll miss him will be one of the ten best constabulary organizations in the world on their time-line. They won't be put off with the sort of lame-brained explanations that usually get by on Europo-American. They'll want factual proof and physical evidence. And we'll have to find where he came out. A man who can beat a Paracop to the draw won't sink into obscurity on any time-line. He's going to kick up a fuss that'll have to be smoothed over."

"I hope he doesn't come out on a next-door time-line and turn up at a duplicate of his own police post, where a duplicate of himself is on duty. With identical fingerprints," the lieutenant said. "That would kick up a small fuss."

"Wouldn't it?" He went to the cabinet and took out the synchronized transposition record and photo film. "Have that rocket held; I'll want it after a while. But I'm going over these myself. I'm going to make this operation my own personal baby."

Calvin Morrison dangled black-booted legs over the edge of the low cliff and wished, again, that he hadn't lost his hat. He knew exactly where he was, he was on the little cliff, not more than a big outcrop, above the road where they'd left the car, but there was no road under it now, nor ever had been. And there was a hemlock four feet at the butt growing right where the farmhouse ought to be, and no trace of the stone foundations of it or the barn. But the really permanent features, the Bald Eagles to the north and Nittany Mountain to the south, were exactly as they should be.

That flash and momentary darkness could have been subjective; put that in the unproven column. He was sure the strangely beautiful dome of shimmering light had been real, and so had the oval desk and the instrument panel and the man with the odd weapon. And there was certainly nothing subjective about all this virgin forest where farmlands ought to be.

He didn't for an instant consider questioning either his senses or his sanity; neither did he indulge in dirty language like "incredible," or "impossible." Extraordinary; now there was a good word. He was quite sure that

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something extraordinary had happened to him. It seemed to break into two parts: (One), the dome of pearly light and what had happened inside it, and, (Two), emerging into this same-but-different place.

What was wrong with both was anachronism, and the anachronisms were mutually contradictory. None of (One) belonged in 1964 or, he suspected, for many centuries to come. None of (Two) belonged in 1964, either, or at any time within two centuries in the past. His pipe had gone out; for a while he forgot to relight it, while tossing those two facts back and forth. Then he got out his lighter and thumbed it, and then buttoned it back in his pocket.

In spite—no, because—of his clergyman father's insistence that he study for and enter the Presbyterian ministry, he was an agnostic. Agnosticism, to him, was refusal either to accept or reject without factual proof. A good philosophy for a cop, by the way. Well, he wasn't going to reject the possibility of time machines; not after having been shanghaied out of his own time in one. Whenever he was, it wasn't the Twentieth Century, and he was never going to get back to it. He made up his mind on that once and for all.

Climbing down from the low cliff, he went to the little brook, and followed it to where it joined a larger stream, just as he knew it would. A bluejay made a fuss at his approach. Two deer ran in front of him. A small black bear regarded him with suspicion and hastened away. Now, if he could find some Indians who wouldn't throw tomahawks first and ask questions afterward . . .

A road dipped to cross the stream. For a moment, he accepted that, then caught his breath. A real, wheel-rutted road! And brown horse-droppings in it, they were the most beautiful things he had seen since he came into this here-and-now. They meant that he hadn't beaten Columbus here, after all. He'd have trouble giving a plausible account of himself, but at least he could do it in English. Maybe he was even in time to get into the Civil War. He waded through the ford and started west along the road, toward where Bellefonte ought to be.

The sun went down in front of him. By now, the big hemlocks were gone, lumbered off, and there was a respectable second growth, mostly hardwoods. Finally, in the dusk, he smelled turned earth beside the road. It was full dark before he saw a light ahead.

The house was only a dim shape, the light came from narrow horizontal windows near the roof. Behind, he thought he could make out stables and, by his nose, pigpens. Two dogs ran into the road and began whauff-whauffing in front of him. "Hello, in there!" he called. Through the open windows he heard voices, a man's a woman's, another man's. He called again. A bar scraped, and the door swung in. A woman, heavy-bodied, in a dark dress, stood aside for him to enter.

It was all one big room, lighted by one candle on a table and one on the mantel and by the fire on the hearth. Double-deck bunks along one wall, table spread with a meal. There were three men and another woman beside the one who had admitted him, and from the corner of his eye he could see children peering around a door that seemed to open into a shed annex. One of the men, big and blond-bearded, stood with his back to the fire, with something that looked like a short gun in his hands. No it wasn't, either; it was a crossbow, bent and quarrel in place.

The other men were younger, the crossbowman's sons for a guess; they were bearded, too, though one's beard was only a fuzz. They all wore short-sleeved jerkins of leather and cross-gartered hose. One of the younger men had a halberd and the other an axe. The older woman spoke in a whisper to the younger; she went through the door, pushing the children ahead of her.

He lifted his hands pacifically as he entered. "I'm a friend," he said. "I'm going to Bellefonte; how far is it?"

The man with the crossbow said something. The man with the halberd said something. The woman replied. The youth with the axe said something, and they all laughed.

"My name's Calvin Morrison. Corporal, Pennsylvania State Police." Hell, they wouldn't know the State Police from the Swiss Marines. "Am I on the road to Bellefonte?"

More back-and-forth. They weren't talking Pennsylvania Dutch, he was sure of that. Maybe Polish; no, he'd heard enough of that to recognize, if he couldn't understand, it. He looked around, while they argued, and saw, in the far corner left of the fireplace, three images on a shelf. He meant to get a closer look at them. Roman Catholics used images, so did Greek Catholics, and he could tell the difference.

The man with the crossbow laid his weapon down, but kept it bent and loaded, and spoke slowly and distinctly. It was no language he had ever heard before. He replied just as distinctly in English. They all looked at one another, passing their hands in front of their faces in bafflement. Finally, by signs, they invited him to sit down and eat, and the children, six of them, trooped in.

The meal was roast ham, potatoes and succotash. The eating tools were knives and a few horn spoons; the men used their sheath knives. He took out his jackknife, a big switch blade he'd taken off an arrest he'd made. It caused a sensation, and he had to demonstrate it several times. There was also elderberry wine, strong but not particularly good. Then they left the table for the women to clear, and the men filled pipes from a tobacco jar on the mantel, offering it to him. He filled his pipe and lighted it, as they did theirs, with a twig at the fire. Stepping back, he got a look at the images.

The central figure was an elderly man in a white robe, with a blue eight-pointed star on the breast. He was flanked, on one side, by a seated female figure, exaggeratedly pregnant, crowned with a grain, and holding

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a cornstalk, and, on the other, by a masculine figure in a male shirt, with a spiked mace. The only really unusual thing about him was that he had the head of a wolf. Father-god, fertility-goddess, war-god; no, this gang weren't Catholics, Greek, Roman or any other kind. He bowed to the central figure, touching his forehead, and repeated the gesture to the other two. There was a gratified murmur behind him; anybody could see he wasn't any heathen. Then he sat down on a chest against the wall.

They hadn't re-barred the door. The children had been chased back into the shed after the meal. Nobody was talking, everybody was listening. Now that he remembered, there had been a vacant place at the table. They'd sent one of the youngsters off with a message. As soon as he finished his pipe, he pocketed it, and unobtrusively unsnapped the strap of his holster. It might have been half an hour before he heard galloping hoofs down the road. He affected not to hear; so did everybody else. The older man moved over to where he had put down his crossbow; his elder son got the halberd and a rag as though to polish the blade. The horses clattered to a stop outside, accoutrements jingled. The dogs set up a frantic barking. He slipped the .38 out and cocked it.

The youngest man went to the door. Before he could touch it, it flew open in his face, knocking him backward, and a man—bearded face under a high-combed helmet, steel breastplate, black and orange scarf—burst in, swinging a long sword. Everybody in the room shouted in alarm; this wasn't what they'd been expecting, at all. There was another helmeted head behind the first man, and the muzzle of a short musket. Outside, a shot boomed and one of the dogs howled.

He rose from the chest and shot the man with the sword. Half-cocking with the double action and thumbing the hammer the rest of the way, he shot the man with the musket. The musket went off into the ceiling. A man behind caught a crossbow quarrel through the forehead and pitched forward on top of the other two, dropping a long pistol unfired.

Shifting the Colt to his left hand, he caught up the sword the first man had dropped. It was lighter than it looked, and beautifully balanced. He tramped over the bodies in the doorway, to be confronted by another swordsman outside. For a few moments they cut and parried, and then he drove his point into his opponent's unarmored face and tugged his blade free. The man in front of him went down. The boy who had been knocked down had gotten hold of the dropped pistol and fired it, hitting a man who was holding a clump of horses in the road. The older son dashed out with his halberd, chopping a man down. The father had gotten hold of the musket and ammunition, and was ramming a charge into it.

Driving the point of the sword into the ground, he holstered the .38-special; as one of the loose horses dashed past, he caught the reins and stopped it, vaulting into the saddle. Then, stooping, he retrieved his sword, thankful that even in a motorized age the State Police insisted on teaching their men to ride. The fight was over, at least here. Six attackers were down, presumably dead. The other two were galloping away. Five loose horses milled about, and the two young men were trying to catch them. The older man, priming the pan of the gun, came outside, looking around.

This had only been a sideshow fight, though. The main event was half a mile down the road, where he could hear shots, yells, and screams, and where a sudden orange glare mounted into the night. He was wondering just what he'd cut himself into when the fugitives began streaming up the road. He had no trouble identifying them as such; he'd seen enough of that in Korea. Another fire was blazing up beside the first one.

Some of them had weapons, spears and axes, a few bows, and he saw one big musket. His bearded host shouted at them, and they stopped.

"What's going on, down there?" he demanded loudly.

Babble answered him. One or two tried to push past; he hit at them with his flat, cursing them luridly. The words meant nothing, but the tone did. That had worked for him in Korea, too. They all stopped, in a clump; a few cheered. Many were women and children, and not all the men were armed. Call it twenty effectives. The bodies in the road were quickly stripped of weapons; out of the corner of his eye he saw the two women of the house passing things out the door. Four of the riderless horses had been caught and mounted. More fugitives came up, saw what was going on, and joined.

"All right!" he bawled. "You guys want to live forever?" He swung his sword to include all of them, then stabbed down the road with it. "Let's go!"

A cheer went up, and as he started his horse the whole mob poured after him, shouting. They met more fugitives, who stopped, saw that a counterattack had been organized, if that were the word for it, and joined. The firelight was brighter, half a dozen houses must be burning now, but the shooting had stopped. Nobody left to shoot at, he supposed.

Then, when they were halfway to the burning village, there was a blast of forty or fifty shots in less than ten seconds, and more yelling, much of it in alarm. More shots, and then mounted men began streaming up the road; this was a rout. Everybody with guns or bows let fly at them. A horse went down, and another had its saddle emptied. Considering how many shots it had taken for one casualty in Korea, that wasn't bad. He stood up in his stirrups, which were an inch or so too short for him as it was, and yelled, "*Chaaarge!*"—like Teddy, in "Arsenic and Old Lace."

A man coming in the opposite direction aimed a cut at his bare head. He parried and thrust, his point glanced from a breastplate, and before he could recover the other's horse had carried him past and among the spears and pitchforks behind. Then he was trading thrusts for cuts with another rider, wondering if none of these imbeciles

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ever heard that a sword had a point. By this time, the road for a hundred yards ahead, and the open field on the left, was a swirl of horsemen, chopping and firing at each other.

He got his point in under his opponent's armpit, almost had the sword wrenched from his hand, and then saw another rider coming at him, unarmored and wearing a wide hat and a cloak, aiming a pistol almost as long as the arm that held it. He urged his horse forward, swinging back for a cut at the weapon, and knew that he wouldn't make it. *O.K., Cal; your luck's run out.* There was an upflash from the pan of the pistol, a belch of flame from the muzzle, and something sledged him in the chest.

He hung onto consciousness long enough to kick his feet free of the stirrups. In that last moment, he was aware that the rider who had shot him had been a young girl.

Verkan Vall put the lighter down on the desk and took the cigarette from his mouth. Tortha Karf leaned back in the chair in which he, himself, would be sitting all too soon.

"We had one piece of luck, right at the start. The time-line is one we've already penetrated. One of our people, in a newspaper office in Philadelphia, that's the nearest large city, reported the disappearance. The press associations have it already, there's nothing we can do about that."

"Well, just what did happen, on the pickup time-line?"

"This Corporal Morrison and three other State Policemen were closing in on a house in which a wanted criminal was hiding. Morrison and another man were in front; the other two were coming in from behind. Morrison started forward, his companion covering for him with a rifle. This other man is the nearest to a witness there is, and he was watching the front of the house and was only marginally aware of Morrison. He heard the other two officers pounding on the back door and demanding admittance, and then the man they were after burst out the front door with a rifle in his hands. Morrison's companion shouted at him to halt; the criminal raised his rifle, and the State Police officer shot him, killing him instantly.

"Then, he says, he realized that Morrison was nowhere in sight. He called to him, without answer. The man they were after was dead, he wouldn't run off, so all three of them hunted for Morrison for almost half an hour. Then they took the body in to the county seat and had to go through a lot of formalities, and it was evening before they were back at their substation. A local reporter happened to be there at the time. He got the story, including the disappearance of Morrison, phoned it to his paper, and the press associations got it from there. Now the State Police refuse to discuss, and are even trying to deny, the disappearance."

"They believe their man lost his nerve, bolted, and is now ashamed to come back," Tortha Karf said. "Naturally they wouldn't want anything like that getting out. Are you going to use that line?"

He nodded. "The hat he lost in the conveyer. It will be planted about a mile from the scene, along a stream. Then one of our people will catch a local, preferably a boy of twelve or so, give him a hypno-injection, and instruct him to find the hat and take it to the State Police. The reporter responsible for the original news break will be notified by anonymous phone call. Later, there will be the usual spate of rumors of Morrison having been seen in all sorts of unlikely places."

"How about his family?"

"We're in luck there, too. Unmarried, parents both dead, only a few relatives with whom he didn't maintain contact."

"That's good. How about the exit?"

"We have that approximated; Aryan-Transpacific. We're not quite sure even of the sector, because the transposition field was weak for several thousand parayears and we can't determine the instant he broke out of the conveyer. It'll be thirty or forty days before we have it pinpointed. We have one positive indication to look for at the scene."

The chief nodded. "The empty cartridge?"

"Yes. He used a revolver, they don't eject automatically. As soon as he was out and no longer immediately threatened, he would open his revolver, remove the empty, and replace it. I'm as sure of that as though I saw him do it. We may not be able to find it, but if we do, it'll be positive proof."

He woke, in bed under soft covers, and for a moment lay with his eyes closed. There was a clicking sound near him, and from a distance an anvil rang, and there was shouting. Then he opened his eyes. He was in a fairly large room, paneled walls and a painted ceiling; two windows on one side, both open, and nothing but blue sky visible through them. A woman, stout and gray-haired, sat under one, knitting. His boots stood beside a chest across the room, and on its top were piled his clothes and his belt and revolver. A long unsheathed sword with a swept handguard and a copper pommel leaned against the wall by the boots. His body was stiff and sore, and his upper torso was swathed in bandages.

The woman looked up quickly as he stirred, then put down her knitting and rose, going to a table and pouring water for him. Pitcher and cup were silver, elaborately chased. He took the cup, drank, and handed it back, thanking her. She replaced it on the table and went out.

He wasn't a prisoner, the presence of the sword and revolver proved that. This was the crowd that had surprised the raiders at the village. That whole business had been a piece of luck for him. He ran a hand over his chin and estimated about three days' growth of stubble. His fingernails had grown enough since last trimmed to confirm that. He'd have a nasty hole in his chest, and possibly a broken rib.

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The woman returned, accompanied by a man in a cowled blue robe with an eight-pointed white star on his breast. Reversed colors from the image at the peasant's farm; a priest, doubling as doctor. The man laid a hand on his brow, felt his pulse, and spoke in a cheerfully optimistic tone; the bedside manner seemed to be a universal constant. With the woman's help, he changed the bandages and smeared the wound with ointment. The woman took out the old bandages and returned with a steaming bowl. It was turkey broth, with finely minced meat in it. While he was finishing it, two more visitors entered.

One was robed like the doctor, his cowl thrown back. He had white hair, and a good face, gentle and pleasant. His companion was a girl with blond hair cut in what would be a page-boy bob in the Twentieth Century; she had blue eyes and red lips and an impudent tilty little nose dusted with golden freckles. She wore a jerkin of something like brown suede, stitched with gold thread, a yellow under-tunic with long sleeves and a high neck, knit hose and thigh-length boots. There was a gold chain around her neck, and a gold-hilted dagger on her belt. He began to laugh when he saw her; they'd met before.

"You shot me!" he accused, then aimed an imaginary pistol, said, "Bang!" and pointed to his chest.

She said something to the older priest, he replied, and she said something to him, pantomiming shame and sorrow, covering her face with one hand and winking at him over it. When he laughed, she laughed with him. Perfectly natural mistake, she hadn't known which side he was on. The two priests held a lengthy colloquy, and the younger brought him about four ounces of something in a tumbler. It tasted alcoholic and medicinally bitter. They told him, by signs, to go to sleep, and went out, all but the gray-haired woman, who went back to her chair and her knitting. He dozed off.

Late in the afternoon he woke briefly. Outside, somebody was drilling troops. Tramping feet, a voice counting cadence, long-drawn preparatory commands, sharp commands, of execution, clattering equipment. That was another universal constant. He smiled; he wasn't going to have much trouble finding a job, here-and-now, whenever now was.

It wasn't the past. Penn's Colony had never been like this. It was more like Sixteenth Century Europe, but no Sixteenth Century cavalryman, who was as incompetent a swordsman as that gang he'd been fighting, would have lived to wear out his first pair of issue boots. And two years in college and a lot of independent reading had given him at least a nodding acquaintance with most of the gods of his own history, and none, back to Egypt and Sumaria, had been like that trio on the peasant's shrine shelf.

So it was the future. A far future, maybe a thousand years later than 1964, AD; a world devastated by atomic wars, blasted back to the Stone Age, and then bootstrap-lifted to something like the end of the Middle Ages. That wasn't important, though. Now was when he was, and now was when he was stuck.

Make the best of it, Cal. You're a soldier; you just got re-assigned, that's all.

He went back to sleep.

The next morning, after breakfast, he sign-talked the woman watching over him to bring him his tunic, and got out his pipe and tobacco and lighter from the pockets. She brought him a stool to set beside the bed to put things on. The badge on the tunic breast was twisted and lead-splotched; that was why he was still alive.

The old priest and the girl were in, an hour later. This time, she was wearing a red and gray knit frock that could have gone into Bergdorf Goodman's window with a $200 price-tag any day, but the dagger she wore with it wasn't exactly Fifth Avenue. They greeted him, then pulled chairs up beside the bed and got to business.

First they taught him words for "You," and "Me," and "He," and "She," and names. The girl was Rylla. The old priest was Xentos. The younger priest, who came in to see his patient, was Mytron. Calvin Morrison puzzled them; evidently they didn't have surnames here-and-now. They settled for calling him Kalvan. They had several shingle-sized boards of white pine, and sticks of charcoal, to draw pictures. Rylla smoked a pipe, with a small stone bowl and a cane stem, which she carried on her belt along with her dagger. His lighter intrigued her, and she showed him her own. It was a tinderbox, the flint held down by a spring against a semicircular striker which was pushed by hand and returned for another push by a spring. With a spring to drive the striker instead of returning it, it would have done for a gunlock. By noon, they were able to tell him that he was their friend, and he was able to tell Rylla he didn't blame her for shooting him in the skirmish on the road.

They were back in the afternoon, accompanied by a gentleman with a gray mustache and imperial, wearing a garment like a fur-collared bathrobe, with a sword-belt over it. He had a large gold chain around his neck. His name was Ptosphes, and after much pantomime and picture-writing it emerged that he was Rylla's father, that he was Prince of this place, and that this place was Hostigos. Rylla's mother was dead. The raiders with whom he had fought had come from a place called Nostor, to the north and east, ruled by a Prince Gormoth. Gormoth was not well thought of in Hostigos.

The next day, he was up in a chair, and they began giving him solid food, and wine. The wine was excellent; so was the tobacco they gave him. He decided he was going to like it, here-and-now. Rylla was in at least twice a day, sometimes alone, sometimes with Xentos, and sometimes with a big man with a graying beard, Chartiphon, who seemed to be Ptosphes' top soldier. He always wore a sword, and often an ornate but battered steel back-and-breast. Sometimes he visited alone, and occasionally accompanied by a younger officer, a cavalryman named

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Illustrated by John Schoenherr

Harmakros. Harmakros had been in the skirmish at the raided village, but Rylla had been in command.

"The gods," he explained, "did not give Prince Ptosphes a son. A Prince should have a son, to rule after him, so the Princess Rylla must be a son to him."

The gods, he thought, ought to be persuaded to furnish Ptosphes with a son-in-law, named Calvin Morrison, no, Kalvan. He made up his mind to give the gods a hand on that.

Chartiphon showed him a map, elaborately illuminated on parchment. Hostigos appeared to be all of Centre and Union counties, a snip of Clinton south and west of where Lock Haven ought to be, and southeastern Lycoming, east of the West Branch, which was the Athan, and south of the Bald Eagles, the Mountains of Hostigos. Nostor was the West Branch Valley from above Lock Haven to the forks of the river, and it obtruded south into Hostigos through Ante's Gap, Dombra Gap, to take in Nippenose, Sevenhills Valley. To the west, all of Blair County, and parts of Huntington and Bedford, was the Princedom of Sask, ruled by Prince Sarrask. Sarrask was no friend; Gormoth was an open enemy.

On a bigger map, he saw that all Pennsylvania and Maryland, Delaware and the southern half of New Jersey, was the Great Kingdom of Hos-Harphax, ruled from Harphax City at the mouth of the Susquehanna by

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King Kaiphranos. Ptosphes, Gormoth, Sarrask and a dozen other princes were his nominal subjects. Judging from what he had seen on the night of his advent here-and-now, Kaiphranos' authority would be maintained for about one day's infantry march around his capital and ignored elsewhere.

He had a suspicion that Hostigos was in a bad squeeze, between Nostor and Sask. Something was bugging these people. Too often, while laughing with him—she was teaching him to read and write, now, and that was fun—Rylla would remember something she wanted to forget, and then her laughter would be strained. Chartiphon was always preoccupied; occasionally he'd forget, for a moment, what he was talking about. And he never saw Ptosphes smile.

Xentos showed him a map of the world. The world, it seemed, was not round, but flat like a pancake. Hudson's Bay was in the exact center, North America was shaped rather like India, Florida ran almost due east and Cuba north and south. The West Indies were a few random spots to show that the mapmaker had heard about them from somebody. Asia was attached to North America, but it was still blank. An illimitable ocean stretched around the perimeter. Europe, Africa and South America simply weren't. Xentos wanted him to show the country from which he had come. He put his finger down on central Pennsylvania's approximate location. Xentos thought he misunderstood.

"No, Kalvan. This is your home now, and we want you to stay with us, but where is the country you came from?"

"Here," he insisted. "But at another time, a thousand years from now. I had an enemy, an evil sorcerer. Another sorcerer, who was my friend, put a protection on me that I might not be slain by sorcery, so my enemy twisted time around me and hurled me far into the past, before my first known ancestor had been born, and now here I am and here I must stay."

Xentos' hand made a quick circle around the white star on his breast, and he muttered rapidly. Another universal constant.

"What a terrible fate!"

"Yes. I do not like to speak of it, but it was right that you should know. You may tell Prince Ptosphes and Princess Rylla and Chartiphon, but beg them not to speak of it to me. I must forget my old life and make a new one in this time. You may tell the others merely that I come from a far country. From here." He indicated the approximate location of Korea. "I was there, once, fighting in a great war."

"Ah; I knew you had been a warrior." Xentos hesitated, then asked: "Do you know sorcery?"

"No. My father was a priest, as you are, and wished me to become a priest also, and our priests hated sorcery. But I knew that I would never be a good priest, so when this war came, I left my studies and went to fight. Afterward, I was a warrior in my own country, to keep the peace."

Xentos nodded. "If one cannot be a good priest, one should not be a priest at all, and to be a good warrior is almost as good. Tell me, what gods did your people worship?"

"Oh, we had many gods. There was Conformity, and Authority, and Opinion. And there was Status, whose symbols were many and who rode in the great chariot Cadillac, which was almost a god itself. And there was Atombomb, the dread Destroyer, who would some day end the world. For myself, I worshiped none of them. Tell me about your gods, Xentos."

Then he filled his pipe and lit it with the tinderbox he had learned to use in place of his now fuelless Zippo. He didn't need to talk any more; Xentos was telling him about his own god, Dralm, and about Yirtta the All-Mother, and wolf-headed Galzar the god of battle, and Tranth the lame craftsman—funny how often craftsman-gods were lame—and about all the others.

"And Styphon," he added grudgingly. "Styphon is an evil god, and evil men serve him, and are given great wealth and power."

After that, he noticed a subtle change in manner toward him. He caught Rylla looking at him in wondering pity. Chartiphon merely clasped his hand and said, "You'll like it here with us, Kalvan." Prince Ptosphes hemmed and hawed, and said: "Xentos tells me there are things you don't want to talk about, Kalvan. Nobody will mention them to you, ever. We're all happy to have you with us. Stay, and make this your home."

The others treated him with profound respect. They'd been told that he was a prince from a distant land, driven from his throne by treason. They gave him clothes, more than he had ever owned before, and weapons. Rylla gave him a pair of her own pistols, one of which had wounded him in the skirmish. They were two feet long, but lighter than his .38 Colt, the barrels almost paper-thin at the muzzles. They had locks operating on the same principle as the tinderboxes, and Rylla's name was inlaid in gold on the butts. They gave him another, larger room, and a body servant.

As soon as he was able to walk unaided, he went outside to watch the troops being drilled. They had no uniforms except scarves or sashes of Ptosphes' colors, red and blue. The infantry wore leather or canvas jacks sewn with metal plates, and helmets not unlike the one he'd worn in Korea. Some had pikes, some halberds, and some hunting spears, and many had scythe blades with the tangs straightened out, on eight-foot shafts. Foot movements were simple and uncomplicated; the squad was unknown, and they maneuvered by platoons of forty or fifty.

A few of the firearms were huge fifteen pound muskets, aimed and fired from rests. Most were lighter, arquebuses, calivers, and a miscellany of hunting guns. There would be two or three musketeers and a dozen calivermen or arquebusiers to each spear-and-scythe platoon. There

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were also archers and crossbowmen. The cavalry were good; they wore cuirasses and high-combed helmets, and were armed with swords and pistols and either lances or short musketoons. The artillery was laughable; wrought-iron six to twelve pounders, hand-welded tubes strengthened with shrunk-on bands, without trunnions. They were mounted on four wheel carts. He made up his mind to do something about that.

He also noticed that while the archers and crossbowmen practiced constantly, not a single practice shot was fired with any firearm.

He took his broadsword to the castle bladesmith and wanted it ground down into a rapier. The bladesmith thought he was crazy. He called in a cavalry lieutenant and demonstrated with a pair of wooden practice swords. Immediately, the lieutenant wanted a rapier, too. The bladesmith promised to make both of them real rapiers. By the next evening, his own was finished.

"You have enemies on both sides, Nostor and Sask, and that's not good," he said one evening as he and Ptosphes and Rylla and Xentos and Chartiphon sat over a flagon of wine in the Prince's study. "You've made me one of you. Now tell me what I can do to help."

"Well, Kalvan," Ptosphes said, "you could better tell us that. You know many things we don't. The thrusting sword"—he glanced down admiringly at his own new rapier—"and what you told Chartiphon about mounting cannon. What else can you give us to help fight our enemies?"

"Well, I can't teach you to make weapons like that six-shooter of mine, or ammunition for it." He tried, as simply as possible, to explain about machine industry and mass production; they only stared in uncomprehending wonder. "I can show you things you don't know but can do with the tools you have. For instance, we cut spiral grooves in the bores of our guns to make the bullets spin. Grooved guns will shoot harder, farther and straighter than smoothbores. I can show your gunsmiths how to do that with guns you already have. And there's another thing." He mentioned never having seen any practice firing, "You have very little powder, fireseed, you call it. Is that it?"

"We haven't enough in Hostigos to fire all the cannon of this castle once," Chartiphon said. "And we can't get any. The priests of Styphon will give us none, and they send cart after cart of it to Nostor."

"You mean, you get fireseed from the priests of Styphon? Can't you get it from anybody else, or make your own?"

They all looked at him, amazed that he didn't know any better.

"Only Styphon's House can make fireseed, and that by Styphon's aid," Xentos said. "That was what I meant when I said that Styphon gives his servants great wealth, and power even over the Great Kings."

He gave Styphon's House the grudging respect any good cop gives a really smart crook. Styphon's House had a real racket. No wonder this country was a snakepit of warring princes and barons. Styphon's House wanted it that way; it kept them in the powder business. He set down his goblet and laughed.

"You think nobody can make fireseed but Styphon's House?" he demanded. "Why, in my time, even the children could do that." Well, children who got as far as high school chemistry; he'd almost gotten expelled, once. "I can make fireseed, right here on this table!"

Ptosphes threw back his head and laughed. Just a trifle hysterically, but it was the first time he'd ever heard the Prince laugh. Chartiphon banged a fist on the table and shouted, "Ha, Gormoth! Now see how soon your head goes up over your own gate!" And no War Crimes foolishness about it, either. Rylla flung her arms around him. "Kalvan! You really and truly can?"

"But it is only by the power of Styphon . . ." Xentos began.

"Styphon's a big fake; his priests are a pack of impudent swindlers. You want to see me make fireseed? Get Mytron in here; he has everything I need in his dispensary. I want sulfur, he has that, and saltpeter, he has that." Mytron gives sulfur mixed with honey for colds; saltpeter was supposed to cool the blood. "And charcoal, and a couple of brass mortars and pestles, and a flour-screen, and balance-scales."

"Go on, man; hurry!" Ptosphes cried. "Bring him anything he wants."

Xentos went out. He asked for a pistol, and Ptosphes brought one from a closet behind him. He opened the pan and dumped out the priming on a sheet of parchment, touching it off with a lighted splinter. It scorched the parchment, which it shouldn't have, and left too much black residue. Styphon wasn't a very honest powder-maker; he cheapened his product with too much charcoal and not enough saltpeter. Xentos returned, accompanied by Mytron; the two priests carried jars, and a bucket of charcoal, and the other things. Xentos seemed dazed; Mytron was scared and trying not to show it.

He put Mytron to work grinding charcoal in one mortar and Xentos to grinding saltpeter in the other. The sulfur was already pulverized. Screening each, he mixed them in a dry goblet, saltpeter .75, charcoal .15, sulfur .10; he had to think a little to remember that.

"But it's just dust," Chartiphon objected.

"Yes. The mixture has to be moistened, worked into a dough, pressed into cakes and dried, and then ground and sieved. We can't do all that now, but this will flash. Look."

He primed the pistol with a pinch of it, aimed at a half burned log in the fireplace, and squeezed. The pistol roared and kicked. Ptosphes didn't believe in reduced charges, that was for sure. Outside, somebody shouted, feet pounded, and the door flew open. A guard with a halberd looked in.

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"The Lord Kalvan is showing us something with a pistol," Ptosphes said. "There may be more shots; nobody is to worry."

"All right," he said, when the guard closed the door. "Now we see how it fires." He poured in about forty grains, wadded it with a bit of rag, and primed it, handing it to Rylla. You fire. This is a great moment in the history of Hostigos. I hope."

She pushed down the striker, aimed into the fireplace and squeezed. The report wasn't quite as loud, but it did fire. They tried it with a bullet, which went into the log half an inch. He laid the pistol on the table. The room was full of smoke, and they were all coughing, but nobody cared. Chartiphon went to the door and bawled into the hall for more wine.

"But you said no prayers," Mytron faltered. "You just made fireseed. Just like cooking soup."

"That's right. And soon everybody will make fireseed."

And when that day comes, the priests of Styphon will be out on the sidewalk beating a drum for pennies. Chartiphon wanted to know how soon they would be able to march on Nostor.

"It will take more fireseed than Kalvan can make here on this table," Ptosphes told him. "We will need saltpeter, and charcoal, and sulfur. We will have to teach people how to get these things, and grind and mix them, We will need things we don't have, and tools to make them. And nobody knows all this but Kalvan, and there is only one of him."

Well, glory be, Ptosphes had gotten something from the lecture on production, if nobody else had.

"Mytron knows a few things, I think. Where did you get the sulfur and the saltpeter?" he asked the doctor-priest.

Mytron had downed his first goblet of wine at one gulp. He had taken three to the second; now he was working his way down the third and coming out of shock nicely. It was about as he thought. The saltpeter was found in crude lumps under manure piles and refined; the sulfur was gotten by evaporating water from the sulfur springs in Sugar Valley, Wolf Valley here-and-now. For some reason, mention of this threw both Ptosphes and Chartiphon into a fury. He knew how to extract both, on a quart-jar scale. He was a trifle bewildered when told how much would be needed for military purposes.

"But this'll take time," Chartiphon objected. "And as soon as Gormoth hears about it, he'll attack, before we can get any made."

"Don't let him hear about it. Clamp down the security." He had to explain that. "Cavalry patrols, on all the roads and trails out of Hostigos; let anybody in, but don't let anybody out. And here's another thing. I'll have to give orders, and people won't like them. Will I be obeyed?"

"By anybody who wants to keep his head on his shoulders," Ptosphes said. "You speak with my voice."

"And with mine, Lord Kalvan!" Chartiphon was on his feet, extending his sword for him to touch the hilt. "I am at your orders; you command here."

They gave him a room inside the main gateway of the citadel, across from the guardroom, a big flagstone-floored place with the indefinable but unmistakable flavor of a police court. The walls were white plaster, he could write and draw diagrams on them with charcoal. Paper was unknown, here-and-now. He decided to do something about that, after the war. It was a wonder these people had gotten as far as they had without it. Rylla attached herself to him as adjutant. He gathered in Mytron and the chief priest of Tranth, all the master-artisans in Tarr-Hostigos and some from Hostigo Town, a couple of Chartiphon's officers, and some soldiers to carry messages.

Charcoal was going to be easy, there was plenty of that. For sulfur evaporation he'd need big pans, and sheet iron, larger than a breastplate or a cooking pan—all unavailable. There were bog-iron mines over in Bald Eagle, Listra Valley, and ironworks, but no rolling mill. They'd have to beat sheet iron out by hand in two-foot squares and weld them together like a patch quilt. Saltpeter could be accumulated from all over. Manure piles, at least one to a farm, were the best source, and stables, cellars, underground drains. He set up a saltpeter commission, headed by one of Chartiphon's officers, with authority to go anywhere and enter anything, to hang any subordinate who abused that authority out of hand, and to deal just as summarily with anybody who tried to obstruct.

Mobile units, oxcarts loaded with caldrons, tubs, tools and the like, to go from farm to farm. Peasant women to be collected and taught to leach nitrated soil and purify nitrates.

Grinding mills; there was plenty of water power, and the water wheel was known, here-and-now. Gristmills could be converted. Special grinding equipment, designing of. Sifting screens, cloth. Mixing machines, big casks with counter-rotating paddle wheels inside. Presses to squeeze dough into cakes. Mills to grind caked powder; he spent considerable thought on a set of regulations to prevent anything from striking a spark around them, with bloodthirsty enforcement threats.

During the morning, he ground up the cake he'd made the night before, running it through a couple of sieves to FFFg fineness. A hundred-grain charge in one of the big eight-bore muskets drove the two-ounce ball an inch deeper into a log than an equal charge of Styphon's Best, and fouled the bore much less.

By noon, he was almost sure that most of his War Production Board understood most of what he'd told them. In the afternoon, there was a meeting in the outer bailey of as many of the people who would be working on the Fireseed Project as could be collected. There was an invocation of Dralm by Xentos. Ptosphes spoke, bearing down heavily on the fact that the Lord Kalvan had full authority and would be backed to the limit, by the

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headsman if necessary. Chartiphon made a speech, picturing the howling wilderness they were going to make of Nostor. He made a speech, himself, emphasizing that there was nothing whatever of a supernatural nature about fireseed. The meeting then broke up into small groups, everybody having his own job explained to him. He was kept running back and forth from one to another to explain to the explainers.

In the evening, they had a feast. By that time, he and Rylla had gotten a rough table of organization charcoaled onto the wall in his headquarters.

Of the next four days, he spent eighteen hours of each in that room, talking to five or six hundred people. The artisans, who had a guild organization, objected to peasants invading their crafts. The masters complained that the apprentices and young journeymen were becoming intractable, which meant that they had started thinking for themselves. The peasants objected to having their dunghills forked down and the ground under them dug up, and to being put to unaccustomed work. The landlords objected to having the peasants taken from the fields, and predicted that the year's crop would be lost.

"Don't worry about that," he told them. "If we win, we'll eat Gormoth's crops. If we lose, we'll all be too dead to eat."

And the Iron Curtain went down. Itinerant packtraders and wagoners began to collect in Hostigos Town, trapped for the duration. Sooner or later, Gormoth and Sarrask would start wondering why nobody was leaving Hostigos, and send spies in through the woods to find out. Organize some counterespionage; get a few spies of his own into both princedoms.

By the fifth day, the sulfur-evaporation plant was operating, and saltpeter production had started, only a few pounds of each, but that would increase rapidly. He put Mytron in charge of the office, and went out to supervise mill construction. It was at this time that he began wearing armor, at least six and often eight hours a day—helmet over a padded coif, with a band of fine-linked mail around his throat and under his chin, steel back-and-breast over a quilted arming-doublet with mail sleeves, mail under the arms, and a mail skirt to below his hips, and double leather hose with mail between. The whole panoply weighed close to forty pounds, and his life was going to depend on accustoming himself to it.

Verkan Vall watched Tortha Karf spin the empty cartridge on the top of his desk. It was a very valuable empty cartridge; it had cost over ten thousand man-hours of crawling on hands and knees and pawing among dead hemlock needles, not counting transposition time.

"A marvel you found it, Vall. Aryan-Transpacific?"

"Oh, yes. We were sure of that from the first. Styphon's House subsector." He gave the numerical designation of the exact time-line.

"Styphon's House. That's that gunpowder theocracy, isn't it?"

That was it. At one time, Styphon had been a minor god of healing. Still was, on most of Aryan-Transpacific. But, three hundred years ago, on one time-line, a priest of Styphon, trying to concoct a new remedy for something, had mixed a batch of saltpeter, charcoal and sulfur—fortunately for him, a small batch—and put it on the fire. For fifty years, the mixture had been a temple miracle, and then its propellant properties were discovered, and Styphon had gone out of medical practice and into the munitions business. The powder had been improved by priestly researchers; weapons to use it were designed. Now no king or prince without gunpowder stood a chance against one with it. No matter who sat on any throne, Styphon's House was his master, because Styphon's House could throw him off it at will.

"I wonder if this Morrison knows how to make gunpowder," Tortha Karf said.

"I'll find that out. I'm going out there myself."

"You don't have to, you know. You have hundreds of men who could do that."

He shook his head obstinately. "After Year-End Day, I'm going to be chained to that chair of yours. But until then, I'm going to work outtime as much as I can." He leaned over to the map-screen and twiddled the selector until he had the Great Kingdom of Hos-Harphax. "I'm going in about here," he said. "I'll be a pack trader, they go anywhere without question. I'll have a saddle horse and three pack horses, with loads of appropriate merchandise. That's in the adjoining princedom of Sask. I'll travel slowly, to let word travel ahead of me. I may even hear something about this Morrison before I enter Hostigos."

"What'll you do when you find him?"

He shrugged. "That will depend on what he's doing, and particularly how he's accounting for himself. I don't want to, the man's a police officer like ourselves, but I'm afraid I'm going to have to kill him. He knows too much."

"What does he know, Vall?"

"First, he's seen the inside of a conveyer. He knows that it was something completely alien to his own culture and technology. Then, he knows that he was shifted in time, because he wasn't shifted to another place, and he will recognize that the conveyer was the means affecting that shift. From that, he will deduce a race of time-travelers.

"Now, he knows enough of the history of his own time-line to know that he wasn't shifted into the past. And he will also know he wasn't shifted into the future. That's all limestone country, where he was picked up and dropped, and on his own time-line it's been quarried extensively for the past fifty or more years. Traces of those operations would remain for tens of thousands of years, and he will find none of them. So what does that leave?"

"A lateral shift, and people who travel laterally in time," the chief said. "Why, that's the Paratime Secret itself."

There would be a feast at Tarr-Hostigos that evening. All morning cattle and pigs, lowing and squealing, had

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been driven in and slaughtered. Woodcutters' axes thudded for the roasting pits, casks of wine came up from the cellars. He wished the fireseed mills were as busy as the castle kitchens and bakeries. A whole day's production shot to hell. He said as much to Rylla.

"But, Kalvan, they're all so happy." She was pretty excited about it, herself." And they've worked so hard."

He had to grant that, and maybe the morale gain would offset a day's work lost. And they had a full hundredweight of fireseed, fifty per cent better than Styphon's Best, and half of it made in the last two days.

"It's been so long since anybody had anything to be happy about. When we had feasts, everybody would get drunk as soon as they could, to keep from thinking about what was coming. And now, maybe it won't come at all."

And now, they were all drunk on a hundred pounds of black powder. Five thousand arquebus rounds at the most. They'd have to do better than twenty-five pounds a day; have to get it up to a hundred. Mixing, caking and grinding was the bottleneck, that meant still more mill machinery, and there weren't enough men able to build it. It would mean stopping work on the rifling machinery, and on the carriages and limbers for the light four-pounders the ironworks were turning out.

It would take a year to build the sort of army he wanted, and Gormoth or Nostor would attack in two months at most.

He brought that up, that afternoon, at General Staff meeting. Like rifling and trunnions on cannon and teaching swordsmen to use the point, that was new for here-and-now. You just hauled a lot of peasants together and armed them, that was Organization. You picked a march-route, that was Strategy. You lined up your men somehow and shot or hit anybody in front of you, that was Tactics. And Intelligence was something mounted scouts, if any, brought in at the last moment from a mile ahead. It cheered him to recall that that would be Gormoth's idea of the Art of War. Why, with ten thousand men Gustavus Adolphus or the Duke of Parma or Gonzalo de Córdoba could have gone through all five of these Great Kingdoms like a dose of croton oil.

Ptosphes and Rylla were present *ex officio* as Prince and Heiress-Apparent. The Lord Kalvan was Commander-in-Chief. Chartiphon was Field Marshal and Chief of Operations. Harmakros was G-2, an elderly infantry captain was drillmaster, paymaster, quartermaster, inspector-general and head of the draft board. A civilian merchant, who wasn't losing any money on it, was in charge of supply and procurement. Xentos, who was Ptosphes' chancellor as well as chief ecclesiastic, attended to political matters, and also fifth-column activities, another of Lord Kalvan's marvelous new ideas, mainly because he was in touch with the priests of Dralm in Nostor and Sask, all of whom hated Styphon's House beyond expression.

The first blaze of optimism had died down, he was glad to observe. Chartiphon was grumbling:

"We have three thousand at most; Gormoth has ten thousand, six thousand mercenaries and four thousand of his own people. Making our own fireseed gives us a chance, which we didn't have before, but that's all."

"Two thousand of his own people," somebody said. "He won't take the peasants out of the fields."

"Then he'll attack earlier," Ptosphes said. "While our peasants are getting the harvest in."

He looked at the map painted on one of the walls. Gormoth could invade up the Listra Valley, but that would only give him half of Hostigos—less than that. The whole line of the Mountains of Hostigos was held at every gap except one, Dombra Gap, guarded by Tarr-Dombra, lost by treachery three quarters of a century ago, and Sevenhills Valley behind it.

"We'll have to take Tarr-Dombra and clean Sevenhills Valley out," he said.

Everybody stared at him. It was Chartiphon who first found his voice.

"Man! You never saw Tarr-Dombra, or you wouldn't talk like that. It's smaller than Tarr-Hostigos, but it's even stronger."

"That's right," the retread captain who was G-1 and part of G-4 supported him.

"Do the Nostori think it can't be taken, too?" he asked. "Then it can be. Prince, have you plans of the castle?"

"Oh, yes. On a big scroll, in one of my coffers. It was my grandfather's, and we always hoped . . ."

"I'll want to see them. Later will do. Do you know of any changes made on it since?"

Not on the outside, at least. He asked about the garrison; five hundred, Harmakros thought. A hundred regular infantry of Gormoth's, and four hundred cavalry for patrolling around the perimeter of Sevenhills Valley. They were mercenaries, and they were the ones who had been raiding into Hostigos.

"Then stop killing raiders who can be taken alive. Prisoners can be made to talk." The Geneva Convention was something else unknown here-and-now. He turned to Xentos. "Is there a priest of Dralm in Sevenhills Valley? Can you get in touch with him, and will he help us? Explain that this is a war against Styphon's House."

"He knows that, and he will help, as he can. But he can't get into Tarr-Dombra. There is a priest of Galzar there for the mercenaries, and a priest of Styphon for the lord of the castle. Among the Nostori, Dralm is but a god for the peasants."

That rankled. Yes, the priests of Dralm would help.

"All right. But he can talk to people who can get in, can't he? And he can send messages, and organize an espionage apparatus among his peasants. I want to know everything that can be found out, no matter how trivial. Particularly, I want to know the guard-routine at the castle, and how it's supplied. And I want it observed all the time; Harmakros, you find men to do that. I take it we can't storm the place, or you'd have done that long ago. Then we'll have to surprise it."

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Verkan the pack trader went up the road, his horse plodding unhurriedly and the pack horses on the lead-line trailing behind. He was hot and sticky under his steel back-and-breast, and sweat ran down his cheeks from under his helmet into his new beard, but nobody ever saw an unarmed pack trader, so he had to endure it. They were local-made, from an adjoining near-identical time-line, and so were his clothes, his sword, the carbine in the saddle sheath, his horse gear, and the loads of merchandise, all except a metal coffer on top of one pack load.

Reaching the brow of the hill, he started down the other side, and as he did he saw a stir in front of a thatched and whitewashed farm cottage. Men mounting horses; glints of armor, and red-and-blue Hostigi colors. Another cavalry post, the third he'd passed since crossing the border from Sask. The other two had ignored him, but this crowd meant to stop him. Two had lances, the third a musketoon, and the fourth, who seemed to be in command, had his holsters open and his right hand on his horse's neck.

He reined in his horse; the pack horses came to a well-trained stop.

"Good cheer, soldiers," he greeted.

"Good cheer, trader," the man with his hand close to his pistol-butt replied. "From Sask?"

"Sask last. From Ulthor, this trip; Grefftscharr by birth." Ulthor was the lake port to the northwest; Grefftscharr was the kingdom around the Great Lakes. "I'm for Agrys City."

One of the troopers laughed. The sergeant asked: "Have you any fireseed?"

"About twenty charges." He touched the flask on his belt. "I tried to get some in Sask, but when the priests of Styphon heard that I was coming through Hostigos they'd give me none."

"I know; we're under the ban, here." It did not seem to distress him greatly. "But I'm afraid you'll not see Agrys soon. We're on the edge of war with Nostor, and the Lord Kalvan wants no tales carried, so he's ordered that no one may leave Hostigos."

He cursed; that was expected of him.

"I'd feel ill-used, too, in your place," the sergeant sympathized, "but when princes and lords order, commonfolk obey. It won't be so bad, though. You can get good prices in Hostigos Town or at Tarr-Hostigos, and then, if you know a skilled trade, you can find work at good wages. Or you might take the colors. You're well armed and horsed; the Lord Kalvan welcomes all such."

"The Lord Kalvan? I thought Ptosphes was Prince of Hostigos."

"Why, so he is, Dralm guard him, but the Lord Kalvan, Dralm guard him, too, is the war leader. It's said he's a prince himself, from a far land. It's also said that he's a sorcerer, but that I doubt."

Ah, yes; the stranger prince from afar. And among these people, Corporal Calvin Morrison—he willed himself no longer to think of the man as anything but the Lord Kalvan—would be suspected of sorcery. He chatted pleasantly with the sergeant and the troopers, asking about inns, about prices being paid for things, all the questions a wandering trader would ask, then bade them good luck and rode on. He passed other farms along the road. At most of them, work was going on; men were forking down dunghills and digging under them, fires burned, and caldrons steamed over them. He added that to the cheerfulness with which the sergeant and his men had accepted the ban of Styphon's House.

Styphon, it seemed, had acquired a competitor.

Hostigos Town spread around a low hill and a great spring as large as a small lake, facing the mountains which, on the Europo-American Sector, had been quarried into sheer cliffs. The Lord Kalvan wouldn't fail to notice that. Above the gap stood a strong castle; that would be Tarr-Hostigos, *tarr* meant castle, or stronghold. The streets were crowded with carts and wagons; the artisans' quarter was noisy with the work of smiths and joiners. He found the Sign of the Red Halberd, the inn the sergeant had commended to him. He put up his horses and safe-stowed the packs, all but his personal luggage, his carbine, and the metal coffer. A servant carried the former; he took the coffer over one shoulder and followed to the room he had been given.

When he was alone, he set the coffer down. It was an almost featureless block of bronze, without visible lock or hinges, only two bright steel ovals on the top. Pressing his thumbs to these, he heard a slight click as the photoelectric lock inside responded to his thumbprint patterns. The lid opened. Inside were four globes of gleaming coppery mesh, a few small instruments with dials and knobs, and a little sigma ray needler, a ladies' model, small enough to be covered by his hand, but as deadly as the big one he usually carried. It was silent, and it killed without trace that any autopsy would reveal.

There was also an antigrav unit, attached to the bottom of the coffer; it was on, the tiny pilot light glowed red. When he switched it off, the floor boards under the coffer creaked. Lined with collapsed metal, it now weighed over half a ton. He pushed down the lid, which only his thumbprints could open, and heard the lock click.

The common room downstairs was crowded and noisy. He found a vacant place at one of the long tables and sat down. Across from him, a man with a bald head and a small straggling beard grinned at him.

"New fish in the net?" he asked. "Welcome. Where from?"

"Ulthor, with three horse loads. My name's Verkan."

"Mine's Skranga." The bald man was from Agrys City.

"They took them all, fifty of them. Paid me less than I asked, but more than I thought they would, so I guess I got a fair price. I had four Trygathi herders, they're all in the cavalry, now. I'm working in the fireseed mill."

"The what?" He was incredulous. "You mean these people make their own fireseed? But nobody but the priests of Styphon can do that."

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Skranga laughed. "That's what I thought, when I came here, but anybody can do it. No more trick than boiling soap. See, they get saltpeter from under dunghills, and . . ."

He detailed the process, step by step. The man facing him joined the conversation; he even understood, dimly, the theory. The charcoal was what burned, the sulfur was the kindling, and the saltpeter made the air to blow up the fire and blow the bullet out of the gun. And there was no secrecy about it, at least inside Hostigos. Except for keeping the news out of Nostor until he had enough fireseed for a war, the Lord Kalvan simply didn't care.

"I bless Dralm for bringing me into this," the horse trader said. "When people can leave here, I'm going some place and start making fireseed myself. Why, I'll be rich in a few years, and so can you."

He finished his meal, said he had to return to work, and left. A cavalry officer who had been sitting a few places down the table picked up his cup and flagon and took the vacant seat.

"You just came in?" he asked. "From Nostor?"

"No, from Sask." The answer seemed to disappoint the cavalryman; he went into the Ulthor-Grefftscharr story again. "How long will I be kept from going on?"

"Till we fight the Nostori and beat them. What do the Saski think we're doing here?"

"Waiting to have your throats cut. They don't know anything about your making fireseed."

The officer laughed. "Ha! Some of them'll get theirs cut, if Prince Sarrask doesn't mind his step. You say you have three horse loads of Grefftscharr wares; any weapons?"

"Some sword blades. Some daggers, a dozen gunlocks, three good shirts of rivet-link mail, bullet molds. And brassware, and jewelry, of course."

"Well, take your loads up to Tarr-Hostigos. They have a little fair each evening in the outer bailey, you can sell anything you have. Go early. Use my name"—he gave it—"and speak to Captain Harmakros. He'll be glad of any news you have."

He re-packed his horses, when he had eaten, and led them up the road to the castle above the gap. Along the wall of the outer bailey, inside the gate, were workshops, all busy. One thing he noticed was a gun carriage for a light field piece being put together, not a little cart, but two big wheels and a trail, to be hauled with a limber. The gun for it was the sort of wrought-iron four-pounder normal for this sector, but it had trunnions, which was not. The Lord Kalvan, again.

Like all the local gentry, Captain Harmakros wore a small neat beard. His armor was rich but well battered, but the long rapier on his belt was new. He asked a few questions, then listened to a detailed account of what Verkan the trader had seen and heard in Sask; the mercenary companies Sarrask had hired, the names of the captains, their strength and equipment.

"You've kept your eyes open and your wits about you," he commented. "I wish you'd come through Nostor instead. Were you ever a soldier?"

"All traders are soldiers, in their own service."

"Yes, well when you've sold your loads, you'll be welcome in ours. Not as a common trooper, as a scout. You want to sell your pack horses, too? We'll give you your own price for them."

"If I sell my loads, yes."

"You'll have no trouble doing that. Stay about, have your meals with the officers here. We'll find something for you."

He had some tools, for both wood and metal work. He peddled them among the artisans, for a good price in silver and a better one in information. Beside cannon with trunnions on regular field-carriages, Kalvan had introduced rifling in small arms. Nobody knew whence Kalvan had come, but they knew it had been a great distance.

The officers with whom he ate listened avidly to what he had to tell about his observations in Sask. Nostor first, and then Sask, seemed to be the schedule. When they talked about the Lord Kalvan, the coldest expressions were of deep respect, and shaded up to hero-worship. But they knew nothing about him before the night he had appeared at a peasant's cottage and rallied a rabble fleeing from a raided village.

He sold the mail and sword blades and gunlocks as a lot to one of the officers; the rest of the stuff he spread to offer to the inmates of the castle. He saw the Lord Kalvan strolling through the crowd, in full armor and wearing a rapier and a Colt .38-special on his belt. He had grown a small beard since the photograph the Paratime Police had secured on Europo-American had been taken. Clinging to his arm was a beautiful blond girl in male riding dress; Prince Ptosphes' daughter Rylla, he was told. He had already heard the story of how she had shot him by mistake in a skirmish and brought him to Tarr-Hostigos to be cared for. The happy possessiveness with which she held his arm, and the tenderness with which he looked at her, made him smile. Then the smile froze on his lips and died in his eyes as he wondered what Kalvan had told her privately.

Returning to the Red Halberd, he spent some time and money in the taproom. Everybody, as far as he could learn, seemed satisfied that Kalvan had come, with or without divine guidance, to Hostigos in a perfectly normal manner. Finally he went to his room.

Pressing his thumbs to the sensitized ovals, he opened the coffer and lifted out one of the gleaming copper-mesh balls. It opened at pressure on a small stud; he drew out a wire with a mouthpiece attached, and spoke for a long time into it.

"So far," he concluded, "there seems to be no question of anything paranormal about the man in anybody's mind. I have not yet made any contacts with anybody who would confide in me to the contrary. I have been offered an opportunity to take service under him as a scout;

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I intend doing this. Some assistance can be given me in carrying out this work. I will find a location for a conveyer-head; this will have to be somewhere in the woods near Hostigos Town. I will send a ball through when I do. Verkan Vall, ending communication."

Then he set the timer of the transposition field generator and switched on the antigrav unit. Carrying the ball to the open window, he released it. It rose quickly into the night, and then, high above, among the many visible stars, there was an instant's flash. It could have been a meteor.

Kalvan sat on a rock under a tree, wishing that he could smoke, and knowing that he was beginning to be scared. He cursed mentally. It didn't mean anything, as soon as things got started he'd forget to be scared, but it always happened before, and he hated it. It was quiet on the mountain top, even though there were two hundred men sitting or squatting or lying around him, and another five hundred, under Chartiphon and Prince Ptosphes, five hundred yards behind. There were fifty more a hundred yards ahead, a skirmish-line of riflemen. Now there was a new word in the here-and-now military lexicon. They were the first riflemen on any battlefield in the history of here-and-now. A few of the rifles were big fifteen to twenty pound muskets, eight- to six-bore; mostly they were calivers, sixteen- and twenty-bore, the size and weight of a Civil War musket. They were commanded by the Grefftscharr trader, Verkan. There had been objection to giving an outland stranger so important a command; he had informed the objectors, stiffly, that he had been an outland stranger himself only recently.

Out in front of Verkan's line, in what the defenders of Tarr-Dombra thought was cleared ground, were fifteen sharpshooters. They all had big-bore muskets, rifled and fitted with peep-sights, zeroed in for just that range. The condition of that supposedly cleared approach was the most promising thing about the whole operation. The trees had been felled and the stumps rooted out, but the Nostori thought Tarr-Dombra couldn't be taken and that nobody would try to take it, so they'd gone slack. There were bushes all over it up to a man's waist, and many of them were high enough to hide behind standing up.

His men were hard enough to see even in the open. The helmets had been carefully rusted, so had the body-armor and every gun-barrel or spearhead. Nobody wore anything but green or brown, most of them had bits of greenery fastened to their helmets and clothes. The whole operation, with over twelve hundred men, had been rehearsed a dozen times, each time some being eliminated until they were down to eight hundred of the best.

There was a noise, about what a feeding wild-turkey would make, in front of him, and then a voice said, "Lord Kalvan!" It was Verkan, the Grefftscharrer. He had a rifle in his hand, and wore a dirty green-gray hooded smock; his sword and belt were covered with green and brown rags.

"I never saw you till you spoke," he commented.

"The wagons are coming. They're around the top switchback, now."

He nodded. "We start, then." His mouth was dry. What was that thing in "For Whom the Bell Tolls" about spitting to show you weren't afraid? He couldn't do that, now. He nodded to the boy squatting beside him; he picked up his arquebus and started back toward where Ptosphes and Chartiphon had the main force.

And Rylla! He cursed vilely, in English; there was no satisfaction in taking the name of Dralm in vain, or blaspheming Styphon. She'd announced that she was coming along. He'd told her she was doing nothing of the sort. So had her father, and so had Chartiphon. She'd thrown a tantrum; thrown other things, too. In the end, she had come along. He was going to have his hands full with that girl, when he married her.

"All right," he said softly. "Let's go earn our pay."

The men on either side of him rose, two spears or scythe-blade things to every arquebus, though some of of the spearmen had pistols in their belts. He and Verkan went ahead, stopping at the edge of the woods, where the riflemen crouched behind trees, and looked across the open four hundred yards at Tarr-Dombra, the castle that couldn't be taken, its limestone walls rising beyond the chasm that had been quarried straight across the mountain top. The drawbridge was down and the portcullis was up, a few soldiers in black and orange scarves—his old college colors, he oughtn't to shoot them—loitering in the gateway. A few more kept perfunctory watch from the battlements.

Chartiphon and Ptosphes brought their men, one pike to every three calivers and arquebuses, up with a dreadful crashing and clattering that almost stood his hair on end under his helmet and padded coif, but nobody at the castle seemed to have heard it. Chartiphon wore a long sack, with neck and arm holes, over his cuirass, and what looked like a well-used dishrag wrapped around his helmet. Ptosphes was in brown, with browned armor, so was Rylla. They all looked to the left, where the road came up the side and onto the top of the mountain.

Four cavalrymen, black-and-orange scarves and lance-pennons, came into view. They were only fake Princeton men; he hoped they'd remember to tear that stuff off before some other Hostigi shot them. A long ox-wagon followed, piled high with hay and eight Hostigi infantrymen under it, then two more cavalrymen in false Nostori colors, another wagon, and six more cavalry. Two more wagons followed.

The first four cavalrymen clattered onto the drawbridge and spoke to the guards at the gate, then rode through. Two of the wagons followed. The third rumbled onto the drawbridge and stopped directly under the portcullis. That was the one with the log framework on top and the log slung underneath. The driver must have cut the strap that held that up, jamming the wagon.

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The fourth wagon, the one loaded to the top of the bed with rocks, stopped on the outer end of the drawbridge, weighting it down. A pistol banged inside the gate, and another; there were shouts of "Hostigos! Hostigos!" The hay seemed to explode off the two wagons in sight as men piled out of them.

He blew his Pennsylvania State Police whistle, and half a dozen big elephant-size muskets bellowed, from places he'd have sworn there had been nobody at all. Verkan's rifle platoon began firing, sharp whip-crack reports like none of the smoothbores. He hoped they were remembering to patch their bullets; that was something new to them. Then he blew his whistle twice and started running forward.

The men who had been showing themselves on the walls were all gone; a musket-shot or so showed that the snipers hadn't gotten all of them. He ran past a man with a piece of fishnet over his helmet, stuck full of oak twigs, who was ramming a musket. Gray powder-smoke hung in the gateway, and everybody who had been outside had gotten in. Yells of "Hostigo!" and "Nostor!" and shots and blade-clashing from within. He broke step and looked back; his two hundred were pouring after him, keeping properly spaced out, the arquebusiers not firing. All the shooting was coming from where Chartiphon—and Rylla, he hoped—had formed a line two hundred yards from the walls and were plastering the battlements, firing as rapidly as they could reload. A canon went off above when he was almost at the end of the drawbridge, and then, belatedly, the portcullis came down to stop seven feet from the ground on the top of the log framework hidden under the hay on the third wagon.

All six of the oxen on the last wagon were dead; the drivers had been furnished short-handle axes for that purpose. The oxen on the portcullis-stopper had also been killed. The gate towers on both sides had already been taken. There were black-and-orange scarves lying where they had been ripped off, and more on corpses. But shots were beginning to come from the citadel, across the outer bailey, and a mob of Nostori were pouring out from its gate. This, he thought, was the time to expend some .38's.

Feet apart, left hand on hip, he aimed and emptied the Colt, killing six men with six shots, timed-fire rate. He'd done just as well at that range on silhouette targets many a time; that was all this was. They were the front six; the men behind them stopped momentarily, and then the men behind him swept around him, arquebuses banging and pikemen and halberdiers running forward. He holstered the emtpy Colt, he only had eight rounds left, now, and drew his rapier and poignard. Another cannon on the outside wall thundered; he hoped Rylla and Chartiphon hadn't been in front of it. Then he was fighting his way through the citadel gate.

Behind, in the outer bailey, something beside "Nostor!" and "Hostigos!" was being shouted. It was:

"Mercy, comrade! Mercy; I yield!"

He heard more of that as the morning passed. Before noon, the Nostori garrison had either been given mercy or hadn't needed it. There had only been those two cannon-shots, though between them they had killed and wounded fifty men. Nobody was crazy enough to attack Tarr-Dombra, so they'd left the cannon empty, and had only been given time to load and fire two. He doubted if they'd catch Gormoth with his panzer down again.

The hardest fighting was inside the citadel. He ran into Rylla there, with Chartiphon trying to keep up with her. There was a bright scar on her browned helmet and blood on her sword; she was laughing happily. He expected that taking the keep would be even bloodier work, but as soon as they had the citadel it surrendered. By that time he had used up all his rounds for the Colt.

They hauled down Gormoth's black flag with the orange lily and ran up Ptosphes' halberd-head, blue on red. They found four huge bombards, throwing hundred-pound stone cannon balls, and handspiked them around to bear on the little town of Dyssa, at the mouth of Pine Creek, Gorge River here-and-now, and fired one round from each to announce that Tarr-Dombra was under new management. They set the castle cooks to work cutting up and roasting the oxen from the two rear wagons. Then they turned their attention to the prisoners herded in the inner bailey.

First, there were the mercenaries. They would enter the service of Ptosphes, though they could not be used against Nostor until their captain's terms of contract with Gormoth had run out. They would be sent to the Sask border. Then, there were Gormoth's own troops. They couldn't be used at all, but they could be put to work, as long as they were given soldiers' pay and soldierly treatment. Then, there was the governor of the castle, a Count Pheblon, cousin to Prince Gormoth, and his officers. They would be released, on oath to send their ransoms in silver to Hostigos. The priest of Galzar elected to go to Hostigos with his parishoners.

As for the priest of Styphon, Chartiphon wanted him questioned under torture, and Ptosphes thought he ought merely to be beheaded on the spot.

"Send him to Nostor with Pheblon," Kalvan said. "With a letter for his highpriest—no, for the Supreme Priest, Styphon's Voice. Tell Styphon's Voice that we make our own fireseed, that we will teach everybody to make it, and that we will not rest until Styphon's House is utterly destroyed."

Everybody, including those who had been making suggestions for novel and interesting ways of putting the priest to death, shouted in delight.

"And send Gormoth a copy of the letter, and a letter offering him peace and friendship. Tell him we'll teach his soldiers how to make fireseed, and they can make it in Nostor when they're sent home."

"Kalvan!" Ptosphes almost howled. "What god has addled your wits? Gormoth's our enemy!"

"Anybody who can make fireseed will be our enemy,

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because Styphon's House will be his. If Gormoth doesn't realize that now, he will soon enough."

Verkan the Grefftscharr trader commanded the party that galloped back to Hostigos with the good news—Tarr-Dombra taken, with over two hundred prisoners, a hundred and fifty horses, four tons of fireseed, twenty cannon. And Sevenhills Valley was part of Hostigos again. Harmakros had destroyed a company of mercenary cavalry, killing twenty and capturing the rest, and he had taken Styphon's temple farm, a richly productive nitriary, freeing the slaves and butchering the priests and the guards. And the once persecuted priest of Dralm had gathered all the peasants for a thanksgiving, telling them that the Hostigi came not as conquerors but as liberators.

He seemed to recall having heard that before, on a number of paratemporal areas, including Calvin Morrison's own.

He also brought copies of the letters Prince Ptosphes had written, or, more likely, which Kalvan had written and Ptosphes had signed, to the Supreme Priest of Styphon and to Prince Gormoth. Dropping a couple of troopers in the town to spread the good news, he rode up to the castle and reported to Xentos. It took a long time to tell the old priest-chancellor the whole story, counting interruptions while Xentos told Dralm about it. When he got away, he was immediately dragged into the officers' hall, where a wine barrel had been tapped. By the time he got back to the Red Halberd in Hostigo Town, it was after dark, and everybody was roaring drunk, and somebody had a little two-pounder in the street and was wasting fireseed that could have been better used to kill Gormoth's soldiers. The bell at the town hall, which had begun ringing while he was riding in through the castle gate, was still ringing.

Going up to his room, he opened the coffer and got out another of the copper balls, putting it under his cloak. He rode a mile out of town, tied his horse in the brush, and made his way to where a single huge tree rose above the scrub oak. Speaking into the ball, he activated and released it. Then he got out his cigarettes and sat down under the tree to wait for the half hour it would take the message-ball to reach Fifth Level Police Terminal Time-Line, and the half hour it would take a mobile antigrav conveyer to come in.

The servant brought him the things, one by one, and Lord Kalvan laid them on the white sheet spread on the table top. The whipcord breeches; he left the billfold in the hip pocket. He couldn't spend United States currency here, and his identity cards belonged to another man, who didn't exist here-and-now. The shirt, torn and blood-stained; the tunic with the battered badge that had saved his life. The black boots, one on either side; the boots they made here were softer and more comfortable. The Sam Browne belt, with the holster and the empty-looped cartridge-carrier and the handcuffs in their pouch. Anybody you needed handcuffs on, here-and-now, you just shot or knocked on the head. The Colt Official Police; he didn't want to part with that, even if there were no more cartridges for it, but the rest of this stuff would seem meaningless without it. He slipped it into the holster, and then tossed the blackjack on top of the pile.

The servant wrapped them and carried the bundle out. There goes Calvin Morrison, he thought; long live Lord Kalvan of Hostigos. Tomorrow, at the thanksgiving service before the feast, these things would be deposited as a votive offering in the temple of Dralm. That had been Xentos' idea, and he had agreed at once. Beside being a general and an ordnance engineer and an industrialist, he had to be a politician, and politicians can't slight their constituents' religion. He filled a goblet from a flagon on the smaller table and sat down, stretching his legs. Unchilled white wine was a crime against nature; have to do something about refrigeration—after the war, of course.

That mightn't be too long, either. They'd already unsealed the frontiers, and the transients who had been blockaded in would be leaving after the feast. They all knew that anybody could make fireseed, and most of them knew how. That fellow they'd gotten those Trygath horses from; he'd had a few words with him, and he was going to Nostor. So were half a dozen agents to work with Xentos' fifth column. Gormoth would begin making his own fireseed, and that would bring him under the ban of Styphon's House.

Gormoth wouldn't think of that. All he wanted was to conquer Hostigos, and without the help of Styphon's House, he couldn't. He couldn't anyhow, now that he had lost his best invasion-route. Two days after Tarr-Dombra had fallen, he'd had two thousand men at the mouth of Gorge River and lost at least three hundred by cannon fire trying to cross the Athan before his mercenary captains had balked, and the night after that Harmakros had come out of McElhattan Gap, Vrylos Gap, with two hundred cavalry and raided western Nostor, burning farms and villages and running off horses and cattle, devastating everything to the end of Listra Valley.

Maybe they'd thrown Gormoth off until winter. That would mean, till next spring. They didn't fight wars in the winter, here-and-now; against mercenary union rules. By then, he should have a real army, trained in new tactics he'd dredged from what he remembered of Sixteenth and Seventeenth Century History. Four or five batteries of little four pounders, pieces and caissons each drawn by four horses, and as mobile as cavalry. And plenty of rifles, and men trained to use them. And get rid of all these bear spears and scythe blade things, and substitute real eighteen-foot Swiss pikes; they'd hold off cavalry.

Styphon's House was the real enemy. Beat Gormoth once, properly, and he'd stay beaten, and Sarrask of Sask was only a Mussolini to Gormoth's Hitler. But Styphon's House was big; it spread over all five Great Kingdoms,

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from the mouth of the St. Lawrence to the Gulf of Mexico.

Big but vulnerable, and he knew the vulnerable point. Styphon wasn't a popular god, as, say, Dralm was; that was why Xentos' fifth column was building strength in Nostor. Styphon's House had ignored the people and even the minor nobility, and ruled by pressure on the Great Kings and their subject princes, and as soon as they could make their own powder, they'd turn on Styphon's House, and their people with them. This wasn't a religious war, like the ones in the Sixteenth and Seventeenth Centuries in his own former history. It was just a job of racket-busting.

He set down the goblet and rose, throwing off the light robe, and began to dress for dinner. For a moment, he wondered whether the Democrats or the Republicans would win the election this year—he was sure it was the same year, now, in a different dimension of time—and how the Cold War and the Space Race were coming along.

Verkan Vall, his story finished, relaxed in his chair. There was no direct light on this terrace, only a sky-reflection from the city lights below, so dim that the tips of their cigarettes glowed visibly. There were four of them: the Chief of Paratime Police, the Director of the Paratime Commission, the Chairman of the Paratemporal Board of Trade, and Chief's Assistant Verkan Vall, who would be chief in another hundred days.

"You took no action about him?" the director asked.

"None at all. The man's no threat to the Paratime Secret. He knows he isn't in his own past, and from things he ought to find and hasn't he knows he isn't in his own future. So he knows he's in the corresponding present in a second time dimension, and he knows that somebody else is able to travel laterally in time. I grant that. But he's keeping it to himself. On Aryan-Transpacific, in the idiom of his original time-line, he has it made. He won't take any chances on unmaking it.

"Look what he has that the Europo-American Sector could never give him. He is a great nobleman; they're out of fashion on Europo-American, where the Common Man is the ideal. He's going to marry a beautiful princess, that's even out of fashion for childrens' fairy tales. He's a sword-swinging soldier of fortune, and they've vanished from his own nuclear-weapons world. He's in command of a good little army, and making a better one out of it, and he has a cause worth fighting for. Any speculations about what space-time continuum he's in he'll keep inside his own skull.

"Look at the story he put out. He told Xentos that he had been thrown into the past from a time in the far future by sorcery. Sorcery, on that time-line, is a perfectly valid scientific explanation of anything. Xentos, with his permission, passed the story on, under oath of secrecy, to Ptosphes, Rylla, and Chartiphon. The story they gave out is that he's an exiled prince from a country outside local geographical knowledge. Regular defense in depth, all wrapped around the real secret, and everybody has an acceptable explanation."

"How'd you get it, then?" the Board Chairman asked.

"From Xentos, at the feast. I got him into a theological discussion, and slipped some hypno truth-drug into his wine. He doesn't remember, now, that he told me."

"Well, nobody else on that time-line'll get it that way," the Commission director agreed. "But didn't you take a chance getting those things of Morrison's out of the temple? Was that necessary?"

"No. We ran a conveyer in the night of the feast, when the temple was empty. The next morning, the priests all cried 'A miracle! Dralm has accepted the offering!' I was there and saw it. Morrison doesn't believe that, he thinks some of these pack traders who left Hostigos the next morning stole the stuff. I know Harmakros' cavalrymen were stopping people and searching wagons and packs. Publicly, of course, he has to believe in the miracle.

"As to the necessity, yes. This stuff will be found on Morrison's original time-line, first the clothing, with the numbered badge still on the tunic, and, later, in connection with some crime we'll arrange for the purpose, the revolver. They won't explain anything, they'll make more of a mystery, but it will be a mystery in normal terms of what's locally accepted as possible."

"Well, this is all very interesting," the Trade Board chairman said, "but what have I to do with it, officially?"

"Trenth, you disappoint me," the Commission director said. "This Styphon's House racket is perfect for penetration of that subsector, and in a couple of centuries it'll be a very valuable subsector to have penetrated. We'll just move in on Styphon's House, and take it over, the way we did the Yat-Zar temples on the Hulgun Sector, and build that up to general economic and political control."

"You'll have to stay off Morrison's time-line, though," Tortha Karf said.

"You certainly will!" He was vehement about it. "We'll turn that time-line over to the University, here, for study, and quarantine it absolutely to everybody else. And about five adjoining time-lines, for control study. You know what we have here?" He was becoming excited about it. "We have the start of an entirely new subsector, and we have the divarication point absolutely identified, the first time we've been able to do that except from history. Now, here; I've already established myself with those people as Verkan the Grefftscharr trader. I'll get back, now and then, about as frequently as plausible for traveling by horse, and set up a trading depot. A building big enough to put a conveyer head into . . ."

Tortha Karf began laughing. "I knew it," he said. "You'd find some way!"

"All right. We all have hobbies; yours is fruit-growing and rabbit-hunting on Fifth Level Sicily. Well, my hobby farm is going to be the Kalvan Subsector, Fourth Level Aryan-Transpacific. I'm only a hundred and twenty years old, now. In a couple of centuries, when I'm ready to retire . . ." ■

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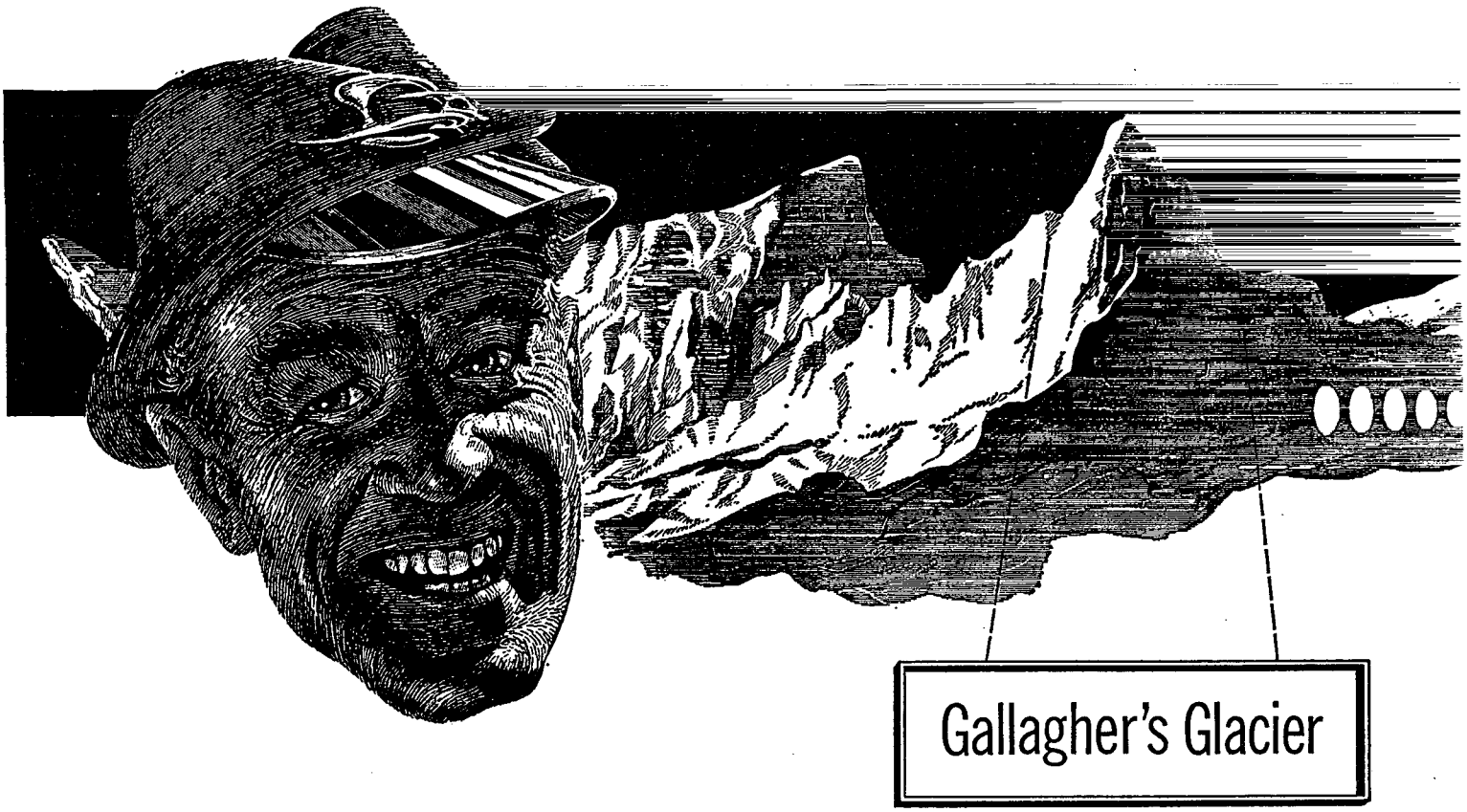

Gallagher's Glacier

It's easy to overlook the real nature of a spaceship; one stuck with the idea that it is a great metal hull, with engines . . .

WALT and LEIGH RICHMOND

Illustrated by Kelly Freas

The thing about history is it's hard to tell whether men make history or history makes men.

Take Gallagher and his glacier. Now you might say that he changed history; and then again you may figure that history would have changed anyhow—that he just happened to be the guy in the spot at the time. I wouldn't know. He was a colorful character, and that's what did the changing in some ways. History needs its Paul Bunyans.

You see, when men first went out into space, the mortality was terrific, but the corporations survived. Men die, and when they're independents, that's that; but when they're representatives of a corporation, why the corporation can follow them up with more men and more, and the corporation stays alive.

People get to thinking that only corporations belong in space, and they act accordingly, and pretty soon space is all tied up in pretty blue corporate ribbons, and it's not really a pioneering venture, and a man doesn't stand so tall, out there in the stars, and the colonies learn to obey the corporate rules . . .

That was the way it was going, and going fast. But the corporations had one drawback. They leaned toward the bright young technicians, like me, with lots of degrees and very little know-how. In space what you really need—it took me a long time to find this out—is what some people call horse sense. You need the ability to translate what you read in a book into what makes sense when it's right before you. You need to do your own looking, and use all that book-learning as a sort of tool, but only as a tool. You need to meet a problem head on, for what it is, not what the book says it's supposed to be.

That kind of man, though, isn't the kind the corporations can hire, even when they want to—which they normally don't. That kind of man is an independent, and, in a battle for the profits that'll make it possible for a man to stay in space, the corporations are likelier to win.

That's where you find the frictions. For the independents may die by the droves, as they did conquering space, but there'll be some that live, and those that stay alive, are a hardier lot. Even in the company colonies, the ones that stayed alive from the beginning, the ones that didn't have to be replaced, had a look about them and a way

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about them, and even the company talked easy to them when it made its rules.

So maybe it wasn't Gallagher at all. Maybe it was the times and how a man develops in space, and he just the man who happened to fit the circumstances.

Now you might think that space is big enough, so you could have the bright young men of the corporations and their seemingly endless replacements; and you could have the independent types that managed to survive after all, and no bother about friction between them. But you'd be wrong. Space is big, but the meeting places are common to both, and the frictions are very real.

It got to be pretty much of a stand-off. The independents that survived had that one common ingredient—horse sense, you could call it; or know-how—and it was a needed thing on the planets. And the corporations could send in all the bright young men they liked to control their colonies, it was the surviving independents with the horse sense that did the controlling where the colonies paid off.

But the corporations controlled the ships, and they were push-button ships those days. You didn't need horse sense. So the bright young technicians—yes, I was one of them—who knew it all and didn't need to be taught anything by space itself controlled the ships. And it was a trading economy.

It took a pile of cash to buy a ship, and a pile of equipment to build one, and as far as anyone could see it would be a long cold year in hell before the independents could master their own fleets and break the hold.

So it would be a long cold year in hell before the frictions left, and meantime you'd better go into port at least three strong men together and stay together. That's how it was, and you'd think that was how it was going to be and from now on.

So maybe it *was* Gallagher and his glacier that changed the times, and not the times that fitted Gallagher.

A pioneer is a man who goes out into the unknown and solves equations to the best of his ability as he meets them. In that respect Gallagher was a pioneer and I knew that in that respect I wasn't. That hurt the ever-living soul of me, underneath all the degrees and certificates that said I was captain of a ship and he wasn't.

An engineer is a man who gets a job done, and in that respect Gallagher was an engineer. I didn't know whether I was an engineer or not, for I had the book-learning, but the ship was a push-button affair that took some handling, but that mostly took automatics; and the Port Inspector was the one who said how the automatics would be structured. Gallagher had as good a piece of paper to prove he was an engineer as I did, but he held that piece of paper in great disrespect, except when he needed a job, which was a good part of the time since, though he was an engineer with a space-lanes long reputation, he never had developed a talent for staying on a company ship. As a pioneer he never had been able to latch into a colony, company or otherwise, and stay, for he had a sociable nature that needed to be out and visiting around the spaceways.

His name was black in the company books, for he'd jump a ship or stow away out of a colony as soon as sign the papers.

So now he sat, mostly in Joe's Bar, and waited for a ship to berth that was setting a course the way he wanted to go. How he was planning to sign on with his name so black in the books, he wasn't saying.

But when my ship berthed, and us heading for Altura, there was a small series of untraceable incidents that left my engineer in hospital.

At the same time I got the news of the "incidents" Gallagher presented himself ship-side with his piece of paper.

"Your next port is Altura," he says proudlike, and him standing six feet tall in my cabin, his red hair nearly brushing the topsides, making me feel small and a little insignificant for all my fine uniform, for I clear that ceiling by a good six inches. "And," he said, "it's in towards Altura that I'm headin'. Now," he went on, and you couldn't call him patronizing, just sort of unbending to any man, "seein' as it's not rightly your fault you're minus an engineer for the course, I'll take on the job without much cost to you. There's a glacier," he says, "that's orbiting towards Altura. You can compute to intersect her within three hours of your port. I'll take on your engineer's post that far and charge you naught, if you'll put me aboard that glacier, me and my equipment. And your assistant engineer can take her in from there."

Well, I was a young man then, and my first command—all spit and polish and by-the-book. And I didn't like that proposition. I didn't even rightly believe it, though there wasn't anything about it to disbelieve. I had heard that, though Gallagher might be footloose and black in the books, he could engineer a ship like the angel of machines sent straight for the purpose.

But I turned him down with a cold rejection that would have been an insult if he'd been looking for insults which were easy enough to find in any port—as I said, the frictions being what they were. It wasn't the sort of thing you did, I told him curtly, horsetrading engineering for passage.

So he turned on his heel and he left with a half-smile, and within two hours I knew what that half-smile meant. There wouldn't be another engineer available in that port, I found out soon enough, and I could knuckle under to his proposition—which I knew was blackmail—or I could argue the point and wait out the next ship through to bring me an engineer and forget the tight, company-set schedule on which I was operating.

I swallowed my pride and started to send along a messenger to fetch the man back. Then I thought me twice, and I put on my best uniform and made my way into the port town. If he refused the messenger, I would have to

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go to him or run late with the company, and company records being what they are, he knew I'd better not run late—me a young man with my first commission.

So in my best uniform, and unaccompanied, though the custom was for not less than three to go ashore together in any port in space, I headed for Joe's Bar, and though I could spy his red hair flaming from the entranceway, I happened not to see him, and sat me down three stools away.

I drank the first two drinks slow and easy, and watched from the corner of my eye that Gallagher paced me drink for drink. Then I spoke me aloud to the bartender, and I called him Joe through courtesy of the title of his bar, though the name Joe had never been used in any christening of his.

"Joe," says I, stumbling over the words just a bit to show I'd been consuming, "my ship's out there with the sweetest motors that all the technical brains of Earth could put into her. These guys they call engineers are just racketeers," I said loud-like. "There's not a thing they can do to a motor to make it purr more sweetly than the designer intended. They just figure to go along for the ride, for it don't take a man to push the buttons."

Well, by the time I'd finished, that red hair was standing on end, and there was no pretense as to whether Gallagher was listening or no. But he gulped a couple of times and bit his tongue. When he finally spoke it was in the brogue, and softlike, and he had his temper where he wanted it, pushing from beneath but not pulling out ahead.

"Mister," says Gallagher, "or perhaps I should say Captain—although button-pushers never seemed to me to rate that title—you show me the drive that I can't tune, and I'll pay you for the privilege of shipping me as engineer for three times five ports, and not jump your ship. There's not a drive operating in a company ship since the corporations took over the shipping lanes that couldn't stand the touch of Gallagher," says he, "and fly so much sweeter because of that touch that even her imbecile master would be forced to admit it, though it cost him his pride, if he had honor to boot."

Now no man impugns my honor, and I was on my feet looking up into that grinning Irish mug of his, fists doubled.

"Set down, captain," says he quiet. "Let's talk this over politelike, for it was a good play and it's got me aboard the *Starfire*, me and my equipment."

Well, that was that, but when I found out what Gallaugher meant by "equipment" I nearly reneged again. The holds would take it, but we'd be shipping heavy.

"You'll only be heavy so long's I'm aboard, and I'll have your drive talking so pretty she'll use less mass than if you were running light with anybody else to engineer her," says Gallagher modestly. "Your assistant will only have to take in a light ship, and the motors already purring."

The "equipment" included one of the old Antolaric drives that used to power the massive ships they sent out when man first entered space, and it was as massive as the old ships used to be. Then there were supplies to last a man for months, but those weren't much; and equipment enough to stock a small machine shop.

Well, I was stuck with it, but that didn't make me like it. I liked it even less when he demanded—he didn't ask, he demanded, but I ignored the manner of his request—twenty-four hours to work on the drive before we lifted.

But when we lifted I didn't begrudge a minute of that twenty-four hours. The *Starfire* acted like a thing alive, and tuned to my every motion. I changed from worrying over what he'd been doing in those twenty-four hours to worrying whether the changes in the engineering setup could be justified to a normal Port Inspection Engineer, even though the results were such as captains dream of. Port Inspection Engineers are the brightest of the bright young men, and I knew my breed and its shortcomings. That drive wasn't tuned by the book. It wouldn't pass.

Well, I didn't understand Gallagher, but I knew him for a breed that caught at the heart of me, for we were both from the oulde country and we were both out in the new spaceways, and there was a kindred between I couldn't deny though the frictions said we were alien, and me a corporation man.

I understood the man even less when we matched courses with his glacier, and I had him and his equipment drifted over to it. It couldn't have been more than a mile the long way, and a quarter mile through, an ungainly hunk of ice idling through space, and what the man could want with it was more than I could see. There were plenty of steel meteorites that size, if Gallagher had wanted to make himself a meteor ship—and I admitted that seeing that old drive was the first inkling I'd got of such a use. But ice? And then I realized. A steel meteor wouldn't have given him reaction mass for his fusion chamber, but that ice was hydrogen, and that would be his mass . . .

We blasted on for Altura, and I spent my best wiles—and the best whisky I could buy—on the Port Inspection Engineer, but to little avail. That ship had to be re-tuned before we blasted again, and he wouldn't even test-blast with me, so I could let him handle a ship when it was tuned the way the *Starfire* was tuned now. It wasn't by the book, and be damned to me. He had a few cutting things to say about what would be in my records, that I'd let a man like Gallagher manhandle my drive.

That Gallagher! I cursed the day I'd met him, me in my spick and span ship with all the properly latest gadgets and technological advances added in as they were developed. I'd never own my own ship, but by the gods I captained a good one! And when my time was run, as it runs fast in the spaceways, I'd have the cash to buy a small farm and settle down on any planet that I chose where they were accepting colonists.

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And there was Gallagher, like he was mocking me, with an old Antolaric drive, sitting out his life on a hunk of ice—with no get up and go, but probably the finest engineering talent on the star lanes! Why, the man could work up to captain, would he abide the rules! And here he wasted that talent, going off junketing with a hunk of ice for a ship and an obsolete Antolaric for a drive, and no holds . . .

But my own ship didn't look as pretty as she used to look; and though I still saw to it that my men only went port-side in threes, I took to going in alone, myself, in full uniform, and be-damned to the risk.

The whole thing worried me, and it worried me more as the months passed and the tales began to be traded from bar to bar.

At first Gallagher and his glacier were a roar of laughter that swept the spaceways—for right enough, Gallagher was using his glacier for mass to feed the fusion chamber of his Antolaric drive, and the places from which he scooped the ice served as holds for shipping.

But it was more than just a roar of laughter. The spaceways had their first independent shipper, and it was a proud thing, out there under the stars. Overnight there wasn't a man jack on a planet that wasn't searching for an old Antolaric of his own. But the corporations weren't exactly napping, and they weren't about to let their monopoly of the shipping lanes fall to the tune of second-hand drives. Within hours there wasn't an Antolaric to be found that didn't have a company label attached. Though the spaceways had an independent shipper, he was the only one, and it looked to be like that sort of permanent, for though the Antolaric is a fairly simple drive to build, it takes machinery to build the machinery to tool with. That was where the Corporations' monopoly began to show. Machinery to build machinery, outside of corporation hands, was a scarce thing on the planets, for Earth had no intention of letting her colonies do more than supply raw materials to her own manufacture.

So in the long run, there was only the one independent skipper in the starpaths, and though Gallagher and his glacier were a laugh at company expense in any port, the company colonies weren't allowed to trade with him. How many of the blackmarket tales were true and how many apocryphal, nobody ever knew. The tales kept running and they grew as such tales will, and one thing was sure —that Gallagher these days had plenty of time and plenty of money to satisfy his sociable nature in the bars up and down the space lanes.

Those tales had the ports and the colonies laughing their belly-laughs, though they didn't seem funny to me at all as I sat in my comfortable captain's cabin, with my bright captain's certificate and wished the man in the netherest regions of hell. Or when I went into the ports alone for sheer defiance, and came back to my ship unchallenged.

Then came the evacuation of the colony of Stellamira—and that was no apocryphal tale, but a fact as real and as stark as a courtroom. It was simple and logical from a pioneer's point of view. If the company had thought of it first it could have been prevented perhaps. But they didn't think of it as a possibility, and no court in the universe could make a punishment that would be retroactive—or, for that matter, prevent it from happening again.

Colonists, you see, weren't exactly indentured slaves—they were just in debt before ever they left Mother Earth, and obliged to work in the company mines or whatever supported the Company colonies, to pay off the debt. By the books, it took two years to pay off passage to the company planet; and another two to earn passage back, if you wanted to go back. And the company pay-rates were set accordingly. But meantime you had to live, and the company had the stores and your credit was good at the stores.

When Gallagher had come by Stellamira, complete with "ship" and suggested it, the colonists had simply up and signed an I.O.U. to the company for their indebtedness and left, saying they were opening their own mines on their own planet, and would pay the company from the profits. Shouldn't be too hard or take too long at that, since they'd be working for themselves and they had a shipping line—i.e., Gallagher's Glacier. By the time the thing got to court, the debt would be paid, and the legal beagles would have to look far to find a writ to hold them on.

Well, that was how it was for the better part of two years more. The tales grew and the laughter grew, and the company ignored the laughter, waiting patiently for Gallagher to make a wrong move, a move that they could pin him on, but knowing better than to make him a martyr meantime. Corporations are eternal, while a human being has a short span, one lawyer argued it. We can wait the upstart out.

But the company was smarting, for all it pretended to be above the problem. The colonies were restless. But Gallagher was thoroughly enjoying life in the bars of the spaceways, satisfying his sociable nature, though he'd be the first to admit that the responsibilities of his colonists, and handling all their shipping, as well as his black market trade, were interfering with his freedom of movement and like to prove too much for him. The tales were still apocryphal, but even the tales were getting a little dull, what with no new material to feed on.

Then Gallagher hit the galactic funny bone again, though for the life of me I couldn't see what people found so funny about it. Not funny. Just proud-making in a backwards sort of way; and irritating in a much more obvious manner.

It was in a brothel in a port town that the next one started. A man, who set out as an independent prospector in the early days, could fail and get killed, or become a spaceways bum. But for a woman that went with him—or alone—when she failed, or if her man was killed, there

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was only one place she could wind up. Or if she had too much spunk for the company colonies, and found herself on the lam—that's where she'd end. It wasn't that the girls were a special class there, but you did find the kind of horse sense that had at least survived alive in the roughest pioneering man had ever set himself.

So when Gallagher bought out the house and took them all off to a planet of their own, there was sympathy behind the guffaw that went up. And when Gallagher promised them he'd separate the sheep from the wolves along the spaceways bars, and bring them a batch of able wolves to help homestead their planet, there wasn't a man who had to be ashamed to volunteer. And after Gallagher had culled the volunteers, there wasn't a man who went but could be proud of being selected.

I had the bad luck to make planetfall where Gallagher was doing his culling, and I lost an astrogator and a machinist third class to the "cause." And it made me even madder, because underneath I nearly approved of what they were doing.

So I put on my dress uniform, and I walked into the port town—too mad to risk riding—and I looked up Gallagher where the man was satisfying his sociable nature in a bar.

"You got two of my men," I told him without waiting for the amenities.

"Sit down and have a drink," he says. "We'll discuss this politelike."

I sat down, and somehow I didn't seem as little by his side as I did that first day we met. Maybe it was because I'd made the habit of going into ports alone, when it wasn't a secure thing to do. Maybe it was just because I was a captain in the starways, and no matter who owned the ship, I captained it. I'd made that much peace with myself anyhow. But it was an uneasy peace, and I laid it over with a gruffness.

We had a drink and then another, before I said my say.

"You're going to pay a price, you know," I told Gallagher, that gruffness ready and waiting for him to upbraid me on the uniform I wore. "The company's not going to let you get away with this forever." Wasn't what I had in mind to say, but it was what came out.

"There's the price of anything," says Gallagher. "And then there's the value. Let's look at the value," he says, "and then we'll discuss the price." The way he said it, it made sense, and the gruffness began to slip away.

"Where's the value?" I asked, and knew myself a liar in the asking. "Where's the value," I heard my voice go on. "All you're doing is making yourself the laughingstock of the spaceways.

"Takes a free man to laugh," says Gallagher. "And takes laughter to make a man free."

Well, we didn't speak again after that, but we kept ordering up the drinks, and first he'd pay the round and then I would. But we didn't speak, and all the time those words of his were echoing back and forth, back and forth, between us, just as if we were saying them over and over to each other.

When I climbed into my bunk that night the words were still there. "Takes a free man to laugh," the words kept saying, "and takes laughter to make a man free." I kept wondering why I didn't find it funny, what Gallagher was doing, just sad and sort of proud-making in a backwards kind of way.

Well, that was that for a long time, and Gallagher was a thorn in the side of the company, but not a very big thorn, and they continued to ignore the irritation.

As for Gallagher, he had two thriving colonies to ship for now, and the shipping itself was almost more than he could manage with his one glacier. Little by little the responsibility was beginning to interfere with his sociable nature and the habits it preferred, and he was said to complain loudly of the fact.

And me, I listened to the tales that whispered through the bars, and knew most of them to be apocryphal but a good part to be true, and I wondered how people found them funny.

I remembered the way the *Starfire* had come to be a thing alive, when he had engineered her. How the Port Inspector had ordered the drive re-worked to its old condition, the condition by-the-book, when I'd reached Altura, and how she'd never responded with that particular liveness again.

I thought of the small farm I'd buy myself on a company planet where they'd accept colonists, when I retired, and it looked empty and uninspiring.

"THIS IS ENGLISH?" DEPARTMENT

The following sentence is quoted from a technical news journal. Guess what they're talking about!

"First, however, slime bulk concentrate goes to a 150-ft. Eimco middlings thickner, and sand bulk concentrate is separated by a cyclone with the overflow going to the thickner, and the underflow going directly to regrind."

As you dodge that cyclone roaring past, note that every word is a perfectly good English word . . . or appears to be.

Contributions to this department gleefully accepted.

THE EDITOR

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I got out my old engineering and mechanical textbooks, and a book on the Antolaric drive, and began studying how the thing worked.

The next time I made planetfall, I made casual inquiries, and it was easy enough to find out where Gallagher could be expected next. Finding an excuse to get there wasn't as easy, but I managed it by the book, in the proper company protocol manner. When I set down, sure enough the glacier was orbiting the planet, and Gallagher's landing craft was in port.

I put on my dress uniform, and I headed for the nearest bar in the port town. All the time I was calling myself an idiot, and I didn't really believe what it was that I was doing.

I walked into the bar and waited, and I didn't have long to wait. I looked up as Gallagher entered, and I stood up as he neared, and though he stood a head taller than me, the two of us knew then that we were of a size, as I gestured him to a chair.

"Sit down and have a drink," I said. "Let's discuss this politelike."

So we sat down, and we let the matter that we must discuss lie there untouched while we finished the first, and then while we finished the second. And it was halfway through the third drink that we sort of picked it up and looked it over.

"You've got two planets to serve," I told him, quietlike. "You've got a whole spacefull of planets to serve," I added. "What you need is a fleet," I told Gallagher.

"Naw," says Gallagher. "I don't need a fleet. It's the spacefull of planets that needs a fleet."

And that's when I began to see what was funny.

"You're right," I said, and I began to chuckle, but I cut the chuckle off, because there was business that had to be done, and it had to be done right.

"You take this Antolaric drive," I told Gallagher when I got the chuckle cut off good. "It's sort of a T-model affair." I wondered briefly where *that* expression had come from, but then I got myself back on the subject. I had more important things to think about. "It's fairly simple to manufacture."

"Yep," said Gallagher. "It's fairly simple. It's building the machines to tool up with that's taking the time. You're a company man," he said. "I shouldn't be telling you this."

"You've got two planets," I said, ignoring that last, "and if you had the motors to run your original shop to build the machines to tool up with, it wouldn't take too much time to tool up. Say a month. Maybe two months. If you put your whole colonies to work on it."

"If I had the motors."

"Well," I said, "in case my engineer has an accident here, I might be needing me an engineer. And in case you were the only one I could get, why I'd have to sign you on. And, of course, I'm not allowed to make planetfall on your planets, but if we blew a coil while we were orbiting past, why it might be a question of losing a ship or making planetfall there. It might take twenty-four hours, or perhaps even two or three days, to repair the ship, but I'd expect to stay planetbound repairing for a good two months. The *Starfire* has mighty able motors that could be turned to building machines.

"But," I added, just before the roar of laughter that was building in my chest took over, "if all that happened, I'd hope you had somebody in your colony could captain a ship to the next port. Because I expect the company'd cashier me for the benefit of posterity. Just in case they didn't I'd be wanting to jump ship anyhow.

"Comes a time," I said, as the laughter swooped down and just before it took over, "a man's got the right to lean back and laugh, proud among the stars." ■

in times to come

Next month Murray Leinster is back with another of his Med Service yarns—this one titled "Plague on Kryder II" which is not, of course, particularly revealing. But those of you who've been Faithful Readers know Leinster's Doc Calhoun and his adventures in Galactic Medicine.

Now the motivations of germs are easily solved; they have two, and only two. To eat and to reproduce, both without limit. Things with such simple motivations constitute specialized, but basically simple, problems.

As usual, the really tough parts of a medical problem turn out to be due to quite different, and far more complex motivations—motivations which are not *characteristic of germs, but of highly advanced organisms. Like men with wants and desires . . .*

And complex organisms are, of course, much more dangerous than mere monocells. □ THE EDITOR.

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Sweet Dreams, Sweet Princes

MACK REYNOLDS

Illustrated by Robert Swanson

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Part II of III. The problem started with "Doctor, doctor . . . who's got the doctor!" and kept getting more and more vicious as it went. Because the doctor had the key to the world explosion of nuclear war!

Denny and Zero are two gladiators who have fought their way through the national games to the final elimination week. On the last day, twenty-four combatants in all remain. During the week Denny and Zero have on occasion fought side by side, however, they know no more about each other than first names. Today, they are both equipped as heavily armored Secutores and are to fight the net and trident equipped Retiarii in person-to-person combat.

In the fight that follows Denny eliminates his first Retiarius and then looks about for a new foe and sees a single Secutor fighting off two Retiarii. He comes to the rescue, finding the other is Zero. Together they finish off the netmen but in the process Denny is badly wounded though still on his feet. Since this is a fight of elimination, they are bound by arena rules to turn on each other. Zero, however, in anguish at the idea of killing this wounded man who just saved his life, whispers that so many gladiators have already been eliminated that the gong signifying the end of the games must soon ring. He tells Denny to fake it, to pretend to fight, and he, Zero, will carry him. Their ruse must not be discovered or their lives will both be forfeit to the bloodthirsty spectators.

They pretend to fight but Denny weakens and falls to the arena sand. He holds up his hand in the plea for mercy, but the mob gives him thumbs down. Zero, in despair, but unable to do otherwise, begins to bring the point of his sword toward Denny's throat.

On the podium Denny sees an excited telly reporter zeroing-in on his face with a zoom lens so as to be able to televise his death throes to the multi-millions avidly watching the show. However, just at that moment the gong rings ending the games and sparing Denny's life.

Later in the arena hospital, Zero is there when Denny comes out of anesthetic. He reveals that he is JESUS "ZERO" GONZALES, but seems reticent about his work and background. DENNIS "DENNY" LAND, however, tells him that he is Category Education, Sub-Division History, Branch Research, Rank Professor, Caste Mid-Middle. He is an Etruscanologist who was sucked into the national games through accident. He had joined a gladiatorial club in order to study the usage of ancient arms which are used exclusively in the national games. He became so proficient that the hereditary aristocrat who headed the club nominated him for the games and threatened to demote him in caste if he backed out.

Zero, obviously a professional fighter of some sort, is amused by this and, before he leaves says, he'll be seeing Denny later.

To his shock, upon reporting to the University, Denny finds his department head, RONALD UPDIKE, a Low-Upper in caste, incensed at the notoriety Denny has attained with the fracas buffs and gladiatorial fans who get their sadistic kicks watching telly mayhem. Denny realizes that the other is actually jealous of the attention Denny draws. However, he is given an indefinite leave of absence and his appropriation for studying the Etruscans is rescinded.

Meanwhile, in Budapest capital of the Sov-world, YURI MALYSHEV, a top operative of the Chrezvychainaya Komissiya, is mystified at being hurried back from a Siberia assignment to report directly to FERENCZ KODALY head of the espionage-counter-espionage organization. When he is ushered into the Party member's presence he finds the man drunk and with no knowledge of the reason Malyshev was brought from Siberia. However, it turns out that Malyshev's appointment was really with ZOLTAN KORDA, secretary of the drunken bureaucrat.

Korda, ultra-efficient, reveals that the Cold War, dormant for decades, between the West-world, the Sov-world and Common Europe, with the Neut-world standing on the sidelines, threatens to break out. Under the successful Universal Disarmament Pact, which provides for complete inspection and declares illegal the manufacture or possession of any weapons post-1900, there has been peace, although all know that rocket missiles and nuclear weapons know-how are possessed by all except the Neut-world. Now THE GAULLE, dictator of Common Europe, has come up with AUGUSTE BAZAINE, a Belgian scientist who has discovered how to make an anti-anti-missile missile, that is, a weapon which could destroy anti-missiles. With the blueprints of such a weapon in his hands, the balance of potential military power would be disrupted and The Gaulle would be free to descend upon the Neut-world countries to secure the sources of raw materials and the trade which his faltering economy demands.

Evidently, Auguste Bazaine is in a pet and has refused to turn his discovery over to The Gaulle and has retreated to the Spanish resort of Torremolinos where he is sulking. Yuri Malyshev is dispatched by Korda to seize either the plans for the device, if they exist, or to kidnap Bazaine himself.

Back in the West-world Denny Land is summoned to the offices of FRANK HODGSON, secretary of the head of the Bureau of Investigation. There he finds Zero Gonzales, who is obviously a bureau agent. Denny and Zero are given much the same assignment as Yuri Malyshev, that is, to get to Bazaine and try to pry his plans from him. The West-world is as anxious as the Sov-world to

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maintain the status quo *and keep The Gaulle from rocking the boat.*

Also brought into it is BETTE YARDBOROUGH, another bureau agent, who is indignant that she should be placed subordinate to two men. The plan is for Denny to pretend to be on a research expedition seeking proof that the Etruscans colonized Spain before the Phoenicians. Zero is to be his "assistant" and Bette his "secretary." It is known that Bazaine is an amateur archeologist and might be approachable on that basis. Denny refuses the assignment until Hodgson promises to reinstate him at the university if he succeeds.

In departing the Octagon offices of Hodgson, in the company of Bette, Denny inadvertently bumps into a Mid-Upper and is given a strong dressing down in spite of his apologies and Bette's hurried excuses. Denny suspects the man is under the influence of mescaltranc, the widely used "happy-pill" among the Uppers. He threatens to have Denny reduced in caste.

After he is gone and Denny and Bette reveal, in their anger, that they have similar scorn for the Uppers, she takes him to a meeting of the Sons of Liberty, an underground organization which wishes to overthrow the stratified, dormant Welfare State so that the human race can resume its march of progress. But hardly is the meeting begun than the Category Security police raid it, and Denny and Bette attempt to escape out the back.

They are halted by an armed man who snaps, "You are under arrest for subversion!"

Bette blurts, "Zero!"

Part 2

VI

"Holy Jumping Zen," Zero Gonzales yelped. "What are you two doing here?"

Bette had spun and shot a bolt in the door through which they had just passed. Now she snapped, "If we had time for pleasantries, we might ask you the same thing."

He bit right back at her. "I came along with some of the lads to raid a meeting of subversive crackpots."

Denny said, "Well, we're two of the crackpots."

"Oh, great! Come on," Zero snapped. "Let's get out of here. If they nab you, it'd take a month of inter-departmental Sundays to get you cleared."

"Lead on, lead on, and minimize the chatter," Bette told him.

Zero had spun and was speeding down the corridor. "Throw that confounded gun away," he told her. "These Category Security lads are all armed and trigger happy. If one of them spots that peashooter he'll open fire and blow you . . ."

"Not if I see him first," Bette said grimly. "You just keep leading the way."

Even as they ran, Zero turned his eyes upward in resignation. "Oh, fine. Hodgson is going to love this. Three of his operatives in a gun fight with Category Security agents on a raid. Oh, great!"

They came to a turn in the corridor, with a door immediately beyond. Zero skidded to a halt, and held up a hand. His voice was a whisper now. "Listen, I can't be seen. I came along on this raid more or less for laughs . . ."

"Some sense of humor," Bette sniffed.

". . . And, of course, the Security lads all know I'm along. Any rate, there are two of them on the other side of this door. Both armed with handguns. Denny, you're going to have to take them alone. They can't be allowed to see me."

Bette proffered the gun.

Zero snapped. "You can't shoot them, for Zen's sake!"

Denny said, "O.K., get ready to open the door for me. And do it quickly."

Bette shot her eyes from one of them to the other. "You said there were two, with guns. What are you trying to do, Zero, you funker, get Dennis killed?"

Denny growled, "When I flick my hand, get that door open quickly, and get yourself out of the way."

Zero had his hand on the knob, "Right."

Bette gnawed on suddenly dry lips, "Boys . . . listen . . ."

Denny, in a half crouch, flicked his hand in signal, Zero jerked the door open, standing back and to the side.

Denny dashed through, screaming, "Sut!" in a Kiai yell. Bette watched wide-eyed, as he bounced to a halt before the two startled Category Security agents who stood there, talking. One carried a gun, holding it negligently in his right hand, the other's was holstered at his side. Her original idea had been to bring up the rear, ready, if necessary to bring her own weapon into the fray. It took only split seconds to realize that Dennis Land was not going to need her backing.

He had dropped into the Kokutsu-dachi, layout position, his left foot forward, toes pointing straight forward and knees slightly bent. Even as the gun-bearing agent began to bring it up, he blurred into action, screaming, "Sut!" again. His left hand chopped out to the inner wrist of the other's gun hand, thrust it to the side; his right foot lashed out to the agent's groin; simultaneously, his right hand, pointed spearlike, thrust forward to the other's larynx. The Security operative dropped as though dead.

Before he had touched the floor, Denny had whirled and gone into the Zenkutsu-dachi, lunge position, before the second agent. The man was no coward, no matter how bewildered by the developments of the last two seconds; it had taken no longer than that for his companion to be disposed of. He knew better than to try for his weapon. This bouncing, screaming madman before him was not going to give him time to whip out his gun.

The Security man threw a quick right punch, which should have connected and didn't. Denny yelled, "Sut!" and chopped against the fist with his left hand. Simultaneously, as he blocked to the left with his fist Okinawa

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style, thumb side pointed forward, he hit the other on the left ear temple, as he threw his body weight to the left. He brought his right knee up hard into the other's groin, brought his right hand up, knuckles up, under the other's chin. The agent was already collapsing, but Dennis reversed the fist, knuckles down, and slugged him across the left clavical.

It hadn't taken five seconds in all.

Denny turned to them quickly. "Let's get away from here," he rapped. "The first one will be out for about ten minutes. The second for possibly fifteen."

Bette was staring from him to the two fallen men, and then back again. She said, "What did you do?"

Zero began to laugh, even as he led the way. He had remained hidden behind the door, until the two guards had been eliminated. He said to Bette. "You'll have to read through Denny's dossier some time. He holds one of the three Black Belts currently in the West-world."

"Black Belt?" Bette said blankly.

"A Karate award," Zero told her, taking her arm to hurry her along.

Denny said, an element of apology in his voice, "It's been sort of a hobby ever since I was in my teens."

"Some professor," Bette snorted. "What do you teach, mayhem?"

"I teach history," he said, feeling defensive.

She was still staring at him strangely, as Zero hustled them along. "What was all the screaming about?"

"That's the Kiai yell. It's, well, partly psychological, to startle, even scare, your opponent . . ."

"Well, it scared me, and I was on your side."

". . . And it's partly, well, part of the Karate exercise. It enables you to utilize your full strength."

"Some professor," she muttered again.

They had come to a door leading out on the street. Zero opened it, looked up and down. "By pure luck, I parked my hovercar on a side-street, away from the others," he growled. "Come on, let's go. Look nonchalant. Holy Zen, Bette, ditch that gun before we go out on the street."

Bette's small automatic went back into her purse. She composed her face, lit until now with excitement, and they stepped out into the glare of day.

Denny was still breathing deeply from his encounter with the two Category Security agents, but Zero maintained a running banter as they walked along the street. If any fellow pedestrians turned to look at them, it was for the sake of Bette's inordinary good looks, rather than because the trio appeared out of place.

At the car, the three crowded into the front seat. Zero started up, dropped the lift lever, pressed acceleration, and they were off. As soon as they were immediately away from the scene of the raid, he began muttering angrily to himself.

"All right, all right," Bette snapped back at him. "If you have something to say, say it."

He snarled, "Tomorrow we take off for Common Europe on a top-priority mission. And what do you two do? You get yourself into a gang of impractical malcontents who are on the subversive list, and almost get caught."

Bette said tightly. "Members of all revolutionary organizations are considered impractical malcontents, until they've put over their revolution, then, of a sudden, they're heroic patriots, fathers of their country and what not."

Zero shot a disgusted look at her. "I knew you'd been flirting around with these two by four do-gooder outfits, but I didn't think you were serious. And what the devil were *you* doing there, Denny? I didn't know you were interested in politics, especially subversive politics."

"I went along for the ride," Denny told him mildly.

The dark complected agent grunted his irritation. "I'm going to drop you two off. We're due to leave in the morning. Think you can stay out of jail until then?"

"Yes, daddy," Bette said nastily.

Yuri Malyshev, dressed foppishly as a high echelon Party member, arrived in Madrid at the rocketport near Mirasierra on the northern outskirts of the Iberian capital, and put on an act of all but feminine impatience at customs examinations. Common Europe's customs inspections of arrivals from the Sov-world were on the thorough side. Not only was every article of his baggage inspected by eye and hand, but they were then subject to X-ray scanning mechanically. The hidden compartment, the secret pocket or chamber, was a thing of the far past.

For that matter, he thought contemptuously, did they for a moment dream that a real agent, an experienced operative, would be carrying anything incriminating?

Finally cleared, Malyshev hired a chauffeur-driven hovercab to take him to his destination. It was his first visit to Madrid, and he was mildly surprised at the lack of transport automation. It was evidently true, then, that The Gaulle's economists deliberately made work to keep the potential unemployed busy. The basic theory, as he had heard it, was that a busy member of the lower class was less apt to be prone to trouble. He shrugged. Perhaps they were right, the Lowers of the West-world, and the overwhelming majority of the Proletarians in his own Sov-world, had largely been automated into complete idleness and were a potential volcano.

Maintaining his air of foppish disinterest, he gave directions, then watched idly as they entered town. They drove down the broad Avenida del Generalisimo Franco, named, he vaguely recalled, after an adventurer who had seized power during the confused early Twentieth Century before Common Europe hal amalgamated. This avenue blended into Paseo de La Castellana and after about a mile they went through a plaza with a statue that could only be recognized as that of Christopher Colon. Several blocks further and the next plaza—it seemed to be a city of great plazas—contained a huge statue which brought

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a scowl of attempted memory to his face. He asked the driver, who told him it was the ancient goddess Cibele, or Cybele. They proceeded down Paseo del Prado, and pulled up before the imposing Embassy of the Sov-world. Ordering the driver to wait, Yuri Malyshev disappeared through the portals.

He was not unexpected. A young military attaché, a lieutenant, and a Pole, by the looks of him, Yuri decided, took him immediately in hand and to a suite of ornate offices. They arrived, eventually, at a paper strewn desk behind which sat a beleagured looking, heavy-set man, who, had torn open his collar as a concession to Spain's summer weather.

Once through the Embassy portals, Yuri Malyshev had dropped his foppish air. Now, though in mufti, he half came to attention.

The official behind the desk said, "That will be all, Lieutenant Sobieski. See that I am undisturbed until further notice."

The lieutenant clicked heels and said, "Yes, Comrade Colonel." He about-faced and was gone.

Yuri said, "Yuri Malyshev, on assignment from . . . from Commisar Kodály in Budapest."

The other grunted acidly. "Zoltan Korda, you mean, don't you?"

Yuri Malyshev said nothing to that. Far earlier in his career, he had learned the pricelessness of silence on delicate ground.

The other came to his feet and extended a hand. "I'm Colonel Valentin Dumitrescu. We'll be working together, on this Auguste Bazaine matter."

Malyshev shook his head warily. "I understood Comrade Matyas Petöfe was head of the Komissiya, here in Madrid, colonel. If you'll pardon my saying so, my current assignment is such that I must deal with the highest echelons."

Dumitrescu had waved him to a chair, and settled back into his own. "Are you a Party member, colonel?"

Yuri Malyshev said stiffly. "No."

"Neither am I, colonel. Matyas Petöfe, of course, is, this post being such an important one. However"—the Rumanian cleared his throat—"his excellency is so taken up in making, um-m-m, higher decisions, working on over-all policy, that sort of thing, that a great deal of the more mundane matters fall upon my shoulders."

"I see," Malyshev said.

"Yes, indeed," Dumitrescu sighed. "You'd be surprised at the considerable detail work we have here, Colonel Malyshev. By the way, I've heard quite a bit about your activities in the East. Your reputation as a good man in the dill, as the West-world calls it, precedes you."

Yuri nodded his appreciation of the flattery.

The Rumanian sighed again. "Holding down a desk job such as this, can be wearisome, colonel. Particularly here in Spain, the least progressive of all Common Europe. The Spanish are incredibly naïve, politically. Why, do you realize that at a reception the other evening I stood in on a discussion in which several of the local politicians, members of The Gaulle's party, expressed the opinion that Trotsky lives on in Mexico."

Yuri Malyshev looked at him a long moment before saying quietly, "And will never die."

The other's eyebrows went up. "So. You are one of us."

It needed no answer.

Dumitrescu said, "It had been a long time since my last visit home. How is the movement progressing?"

Yuri shook his head, traced a finger down his facial scar. "Slowly, Comrade. Slowly. But progress it does. Our greatest strength is the growing weakness of the enemy. Not a month past but I was shown some statistics on the Party and its decline. Do you realize that Party membership is now less than half what it was twenty years ago? This very policy of theirs, allowing only the children of members to become members, is destroying them. Their women are even going through a fad in which they avoid childbirth."

Dumitrescu nodded. "I've heard about that. It's been going on for years. However, we can't wait for them to breed, or rather to fail to breed, themselves out of existence." He suddenly slapped a palm down on the paper laden desk before him. "They'll ultimately have to be shot out, Comrade Malyshev. They've become parasites on society beyond what the Romanoffs ever were."

Yuri Malyshev twisted his mouth. "I've often wondered where the world would be today, had history taken a different path in 1917. Suppose that Kerensky had never been overthrown by the Bolsheviks and his group had formed a government similar to those prevailing in the West at that time."

The Rumanian grunted acidly. "Or suppose the assassin's bullet had never cut Lenin down, so the the mad-dog Stalin was able to take over his position. What then? Or suppose Stalin had failed in his efforts to destroy the Old Bolsheviks, including your grandfather Vladimir Malyshev. Would they have directed the country in other fashion?"

"I suppose what you are suggesting, is correct. There is no turning back, in history. We must deal with what the past hands down to us and go on from here. The fact that such as Stalin and Khrushchev were guilty of killing those under them by literally millions, from the lowliest of peasants to the actual founders of the Bolshevik organization, the comrades in arms who accomplished the original revolution, is beside the point. Lenin is gone now, Trotsky is gone. But so are Stalin, Beria, Khrushchev and so many of the rest. What we have to do is press on, taking advantage of what they *did* accomplish. Finish off the Party as it is now, and return to the original principles of the Old Bolsheviks."

The Rumanian rose suddenly from his chair and approached a sideboard. He said over his shoulder, "I do not want to give the impression that I operate like a sot of

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a Party member, drinking in mid-morning, however, it's been a time since I've met a fellow member of the Sov-world underground. I recently acquired a bottle of stone age *Tuica* from Transylvania, and insist you try a glass with me."

Yuri came to his feet. "Gladly."

The other poured out two small shot-glasses.

Yuri held his toward the Rumanian. "Trotsky lives!"

"And shall never die! Down with the Party!"

They knocked the fiery Rumanian liqueur back over their palates.

Resuming his seat, the Russian agent said thoughtfully, "That brings something to mind. When I was in Zoltan Korda's office in Budapest, he asked me if I had ever heard our secret passwords. I told him no, of course. But it worries me that he knows of them."

"No underground organization can remain completely undetected. They know we exist. As a matter of fact, I am surprised that, to my knowledge, thus far none of us have been arrested."

Yuri grunted contempt. "The Party grows inefficient, lazy, and sodden with their drink and this new escapism they've acquired from the West-world."

"New escapism?"

"It's a chemical euphoria agent, based on mescaline, I believe. At least they call it mescaltranc in the West-world. The ingredients are evidently quite difficult to come by, so that it's expensive and only Party members can afford its use. It's become quite the fad."

"Everything is fad among the parasites these days. Everything but work. However, although the Party itself has grown lax, don't underestimate such as Zoltan Korda. He is neither lazy, nor incapable."

Yuri growled, "He's not a party member, either. I wish he could be recruited to our cause."

"All in good time. Perhaps he will be, one day. Meanwhile, Comrade—I use the term in the old sense, of course, not as though we were Party members—meanwhile, we must get to the matter of Auguste Bazaine, and the immediate threat he poses to the safety of the whole world."

Yuri leaned back in his chair. "Yes. Korda told me you might be in possession of some more recent details of the situation. Frankly, it astonishes me. Is The Gaulle's power so feeble that an individual scientist can defy him?"

The Rumanian scowled unhappily. "It would seem, if my information is correct, that there is conflict between The Gaulle's closest advisers. He is not, of course, an *absolute* dictator, in the old sense of the word. Though Common Europe is united, it is still composed of a variety of elements, and there is considerable interplay of interests. Those elements in what was once Germany, often have reason to conflict politically and economically with those of, say, Spain, Italy, or Sweden. And, of course, there are the old traditions. When The Gaulle recently officiated at the unveiling of the colossal statue to Hermann Goering and the Luftwaffe, there was considerable ill feeling in that area once known as the Netherlands, and particularly Rotterdam which was leveled in the Second War."

"I realize that there are inner conflicts in Common Europe," Yuri said impatiently.

"Well, this conflict seems to be more important, from our viewpoint, than most of them. It would seem that our Auguste Bazaine actually wishes to *build* these anti-anti-missile missiles of his."

The Russian suddenly stiffened. "*Build* them! Build weapons not in use before 1900. Insane! It's against the Universal Disarmament Pact. The International Disarmament Commission wouldn't stand for it, not to speak of the World Court."

The other was nodding. "Yes, yes, I know. It would seem that the blueprints of the device alone would be sufficient for The Gaulle's needs. That actually flying in the face of the whole world by building the things would be unnecessary. At any rate, that is the split that has taken place. One faction wishes to back Bazaine, and go into production; the other wishes to abide by the Universal Disarmament Pact to the extent of keeping the plans of the device as a sword over the heads of both the Sov-world and the West-world, but going no further."

"They're mad!" Malyshev blurted. "This Bazaine, is mad."

The other shrugged. "That will be for you to discover. He is evidently sulking in Torremolinos, refusing to reveal his gadget, or whatever it is, until his demands are met. In the way of useful information, our Auguste Bazaine does not seem adverse to relaxation, being known to have an eye both for a good vintage, and a well filled bikini."

Malyshev chopped out a short laugh. "They should have sent someone better equipped than I, in that case."

The Rumanian grunted, not being long on humor. "Well, let us get down to details."

VII

They stayed not even one day in Barcelona, that industrial center of Spain, if Spain could be said to have an industrial center. From rocketport, they made their way immediately to the port area and the Paseo de Colon. If Frank Hodgson's scheme was going to work at all, they had to get down to Torremolinos as soon as possible, which wasn't nearly as soon as it should have been.

Their basic problem was to get to Auguste Bazaine at all. It was to be assumed that the man was no fool. Even if he were, The Gaulle's counterespionage was not to be minimized. Common Europe would have no intention of allowing a man as important as Auguste Bazaine to be approached by West-world agents.

They had, then, to utilize some of their precious time building up their protective covering. They had *convincingly* to be Professor Dennis and, noted Etruscanologist, and his party, on research into the question of early

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Etruscan penetration of the Iberian peninsula. They were going to have to devote a few days to buttressing that supposed truth. Otherwise, they could have moved immediately on Torremolinos. As it was, they could only pray that The Gaulle and Bazaine didn't make their peace before they got there.

The yacht wasn't conspicuously large, being crewed by three persons. Each of these, Denny, Zero and Bette understood, were fellow agents of Frank Hodgson and the Bureau of Investigation of the West-world. They were also, however, completely in character. Supposedly, they were citizens of Common Europe, employed on a charter boat. Two of them spoke, or pretended to speak, English only very brokenly, and throughout the period Professor Land and his two assistants were aboard *La Carmencita,* never broke character to the point of speaking on any subject other than the working of the yacht.

For that matter, the small craft's skipper, a Miguel Bienvenida, was almost as taciturn. When the three of them came down the narrow gangplank of *La Carmencita,* he went through the obvious greetings and identification, supervised the coming aboard of their luggage, and when the porters were gone, led them into the salon.

Captain Bienvenida was very brief. He offered them a Fundador, then made his little speech. "My instructions are to captain this yacht. We are to sail along the coast to Torremolinos, making a stop or two along the way. I have no instructions beyond these other than that in emergency I, and my men, are to co-operate, taking your orders, whatever they may be. I am told the operation is of Priority One. I suggest you tell me no more of the operation than is necessary, making it impossible for me to betray you."

Denny began to say something, but Zero anticipated him. He said, merely, "Very sensible, captain. I understand you have some equipment for us."

"I have a suitcase to turn over to you. I have no idea what it contains." He grimaced amusement. "Perhaps books."

He was a small man, typically Catalonian, typically a sailor, his eyes narrowed from long squinting into the glare of the Mediterranean, that brightest of seas, his skin like mahogany from long exposure. He would do, and more than do, obviously. Denny wondered how the other had come into the service of Frank Hodgson, then shrugged it away. He doubted if he would ever learn.

The yacht was supposedly a sailing craft but had inordinary auxiliary engines, evidently. They left the dock and departed the harbor of Barcelona at a neat clip.

Zero Gonzales repaired to the depths of the vessel to check the contents of the suitcase Bienvenida had been entrusted with, but Dennis Land and Bette Yardborough stood at the rail, and looked out on the city disappearing behind and the heights of Montjuich and the Castle de Montjuich which crowned them.

"Holy Zen! But that's beautiful," Bette murmured.

Denny was looking at her from the side of his eyes, thinking, *so are you, girl,* but he said, mildly. "Zen is the, ah, science of meditation or deep concentration, not an individual. It originated in India as the Dhyana school founded by legendary Boddhidarma. Why do people use the word as though Zen was a god or a prophet or something?"

She laughed at him. "Ever the professor of history, eh? Haven't you ever noticed, Dennis, that its priests and strongest adherents to the contrary, a religion invariably evolves, continually changes? Take the Buddah. Siddhartha Gautama actually once lived and taught a not overly complicated philosophy; but after a few centuries his followers had made a god of Gautama, which undoubtedly would have horrified him. Or take Joshua of Nazareth who taught meekness and the brotherhood of man to the poor on the seashores and in the hills. Look what his image changed to in a few centuries."

"Now who's being the professor of history?"

She looked at him quizzically. "You're a queer one, Dennis Land. Are you really a professor?"

He shrugged. "Why not?"

"Now, looking at you, listening to you, I could believe it. You're mild, quiet. Perhaps even gentle is the word. It just doesn't jibe with being a survivor of the national games, nor with holding a . . . what did Zero call it . . . a Karate Black Belt."

Denny looked back to the receding shoreline. He said bitterly. "I'm afraid I chose my hobbies poorly. If I had my way, right this moment I'd be back at the University, up to my ears in books and scrolls."

She said nothing, continued to look at him questioningly.

He said, "I made the mistake of deciding that most historians did a poor job of describing ancient warfare, ancient weapons, gladiatorial combat and such, because it was a field in which they knew nothing. So I spent my hours of recreation learning of the world of violence first hand."

Bette said softly, "Between your accomplishments as a scholar, and a . . . a man of violence, I would assume you have had little time for women, Dennis Land."

Was she joshing him? Denny shot a quick scowl at her. He growled, "I'm no eunuch."

She laughed again, even as she turned away to go below. "After seeing you dispatch those two trained Security lads, I'm sure you're not, Dennis."

He looked after her for a scowling moment, then repaired to the yacht's small bridge, where Captain Bienvenida was at the wheel. The other looked up and said, "There's a copy of *El Pueblo* on the chart table. It's the largest of the Madrid papers. Has an article about your expedition on the second page."

Denny looked at it. "I don't read Spanish. What does it say?"

"That you're looking for evidence the Etruscans spotted trading stations along here, before the Phoeni-

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cians. The Spanish archeologists are quite indignant."

"So am I," Denny sniffed. "What chance is there this will be seen in Torremolinos?"

"The paper's nationally distributed. What's our first stop?"

Denny looked at the chart. "Tarragona. I'll want to take a quick look at the ancient walls there, especially the megalithic ones. There's some argument that they're pre-Roman Iberian, if so, there's a remote chance that they go back to even before Phoenician times. "I'll need some data with which to argue, when we reach Torremolinos."

They stopped briefly at Tarragona, and again at Cartagena where there were even fewer remains of antiquity. Had the expedition been a serious one, Denny would have been in despair. On the third day, they pulled into Malaga.

Making contact with Auguste Bazaine proved easier than Dennis Land, or his two companions had ever expected. Denny began to suspect that the bureau dominated by Frank Hodgson was considerably more efficient than he had thought. Word had somehow gone on ahead of them that the Etruscanologist Professor Land, on what his colleagues would contend was on a wild-goose-chase so far as archeology was concerned, was also the fabulous Denny Land, one of the eight survivors of the West-world national games. Ranking matadors, usually the idols of the expatriate capital, of a sudden took a back seat. *La Carmencita* was met at the dock with invitations for Professor Land and his party to half a dozen cocktail parties, dinner parties, and just plain brawls.

Denny, frowning unhappily, took the sheaf of them down to the small lounge and tossed them to Bette. "We seem to be invited everywhere except to Auguste Bazaine's," he said. "I suppose that would be asking *too* much. I don't recognize the names of any of these people at all. Do you?"

Even as she glanced through the invitations, Zero came in from the bridge. "Just picked up a scrambler message from the chief," he said. "Do you have an invite from a Bill Daly, there?"

"William Daly," Bette said. "Supposedly a cocktail party, but it doesn't even start until seven."

"The chief says to accept it. You two will have to attend."

"How about you?" Denny said. "You're more up on this sinister slinking stuff than I am. You ought to be there. What's our program anyway? What good does it do to go to this party?"

"Hold it, hold it," Zero told him. "How would I know? You play it by ear. I suspect that this Bill Daly is Hodgson's man in Torremolinos. He's almost sure to have an agent centered here, half the big-shots of Common Europe, and quite a few of the Sov-world, either retire here or come down periodically to throw their wing-dings. Did you ever hear the term, sin-city?"

"No," Denny said.

"Nevertheless, and you can take my word for it, this is it. No holds barred. Anything from absinthe to hashish."

Bette said, "I'd still think you ought to attend too, Zero. As Dennis says, he's a tyro."

Zero chuckled. "Not until we find whether Yuri Malyshev is around. He'd spot me. Until we know what the Sov-world agents are up to, I'd better do my snooping around at night, and on the sly."

"How do we recognize this Yuri cloddy when we see him?" Denny said.

Zero grunted. "He has a faint scar down the side of his cheek, all the way from his temple to the point of his chin. I ought to know, I gave it to him. However, don't underestimate Yuri Malyshev. He's no cloddy. He's deceptively easy-going, even gives with an air of being slow moving. Just remember, he's possibly the most dangerous agent Korda has at his command."

"Who the devil's Korda?"

"Zoltan Korda, the actual head of the Chrezvychainaya Komissiya."

"I thought Ferencz Kodály held that commissariat," Bette said.

"He's only the front man. The Party member who holds the title. Korda does the work. He's a good man—speaking of an enemy, of course."

"I give up," Denny said. "It'd take years for me to get into this line of . . . endeavor . . . to the point where I knew what was going on. Very well, Bette and I will attend this cocktail party."

Torremolinos lies eight miles to the south of Malaga, on the road to Gibraltar. Malaga, once Phoenician, once Carthaginian, once Roman, once Visigoth, once Moorish, was the largest city on the Costa del Sol. Torremolinos, its resort neighbor, was the most notorious. Since the 1940s when the town first emerged as an artist-writer's colony, it had grown, boomed, and over and over again. Still, as in the middle of the Twentieth Century, its climate was the best in Europe, its scenic charm superlative, its prices, based on depressed Spanish costs of labor, low by any resort standards.

There seemed to be something in the very atmosphere that attracted the off-beat, the hedonist, the expatriate, the misfit, the seeker of illicit joys, the alcoholic, the sexually unadjusted. And to Torremolinos swarmed the well heeled barons of steel from the Ruhr, sheiks of oil from the Neut-world, high ranking Party members from the Sov-world, expatriates from the West-world, wealthy refugees from all points on the globe, bearers of long forgotten European titles, and, of course, their hangers-on. It was Saturnalia, on a year round basis, Bacchanalia every day of every week.

Bette and Denny took a hovercab from Malaga to the resort town, Denny noting again the use of such common labor as porters on the dock and an actual human driver. Common Europe, or at least this section of it, had far to go to achieve to the degree of emancipation from drudgery that had the West-world. He wondered if it was

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deliberate policy on the part of The Gaulle and his authoritarian government, and decided it must be. Which set him to wondering whether the same policy might not be superior in his own country, working on the assumption that anything was preferable to having the overwhelming majority of your citizenry spending their time bug-eying sadistic telly shows and sucking on trank pills to achieve happiness.

Bette pointed out a large nightspot they were passing. "*New Pogo's?*" she said wryly to the driver. "Where's *Old Pogo's?*"

He seemed to find nothing amusing in the name "There was an original *Pogo's*, way back. Before the Second Civil War and the entry of Spain into Common Europe. You wanted to go to Big Bill Daly's place? It's up here."

Denny said, "You seem to know him. We've never met. What is Big Bill Daly like?"

"The town's oldest resident," the driver said, as though that explained everything.

They pulled up before a monstrous villa, constructed in the old style, the old Andulusian style with its elements of the Moorish. The party, evidently, was already going on.

Denny took his international credit card and pressed it to the telly-screen of the cab's meter, and held the door open for Bette. Bette, in her role as his secretary, had seen fit to minimize nature's gifts, being garbed rather mousily. Which all but disguised her inordinary looks . . . but not quite.

Denny said dryly, from the side of his mouth, as they mounted the wide steps to a huge terrace where the party was in progress, "I thought you were the second weapon in our arsenal. You know, the mopsy fling you were giving me. Do you really think you're going to lure Bazaine in that getup?"

Bette bit back at him, "We'll use the second weapon after the first has failed, you cloddy."

Their host awaited them at the top of the stairs. He was a huge man, now perhaps in his seventies, but straight and obviously firm. He had a bull of a voice, an overpowering mannerism, in his hail-fellow-well-met joviality.

He either knew, or guessed, Denny's identity, roaring out, even as he pumped the newcomer's hand. "The fighting professor! Dennis Land, the only gladiator in the history of the arena educated beyond the third grade." He threw back his head and roared amusement at his own feeble joke.

Denny said, awkwardly, "May I present my secretary, Miss Yardborough?"

Big Bill Daly shook, took her in closely, obviously saw through her demure clothing, and brought his voice down to a shout, though still bearing his air of amusement, "Always the same. It'll never end. Man's system of picking a secretary."

A robot-bar of a model farther advanced than Denny had ever witnessed rolled toward them, and their host pressed drinks into their hands. For a moment, there were no guests in their vicinity, and Daly said softly, one would never have believed he could speak softly. "Sangria, very weak. You can safely drink it. Bazaine's here. So is Andre Condrieu. I sucked Bazaine in because you were coming, and he wants to argue with you, but I couldn't keep Condrieu away. He undoubtedly has a couple of agents around, too."

"Who's Condrieu?" Denny said lowly.

Daly shot a quick, suspicious look at him. "The chief said . . ."

Bette whispered sharply, "The Gaulle's right hand man, some say the power, certainly the brains, behind the throne."

Daly added, "Tough as *nails*. Bad."

Denny pretended to take a sip of the sangria, and nodded approvingly. "Is Yuri Malyshev here?"

"Never heard of him. Oh, yes I have. Sov-world counterespionage laddy. I wouldn't know him. There are some Party members present. They're always as welcome to these pseudo-Bohemian binges as anyone else. It would have been conspicuous if I hadn't invited the usuals."

"Malyshev wouldn't be a usual."

"Some brought guests."

Bette said, "He's supposed to have a scar on his face."

"I haven't spotted him."

Daly wheeled and his voice boomed again, as a newcomer approached them. The other bore a champagne glass, half empty, and though the evening was young, a lilt in his walk. "Augie!" Daly saluted him. "Here he is. Tear into him. The famed Professor Land." He turned to Denny and Bette. "You two'll have to excuse me. I'll leave you in the capable hands of Dr. Auguste Bazaine, down from Brussels. Augie's a scientist, or something, aren't you Augie? But all right once he's got a few absinthe frappés in him."

Bazaine, evidently enough of an exhibitionist to wear old-fashioned spectacles in the way of affectation, glared at Denny. "I came to this confounded soiree, sir, simply to take a good look at you."

Denny blinked at him. "I'm flattered. But . . ."

"You shouldn't be! Confounded nonsense, Etruscans preceding the Phoenicians to Spain. Nonsense." He turned his eyes to Bette, ran them up and down. "Ah, my dear."

Big Bill Daly, playing his role of half drenched host, had turned away and was booming at some fresh comers. Denny said, "Uh, Dr. Bazaine, was it? May I present my secretary, Miss Yardborough?"

The Belgian seemed to hold her hand, rather than shake it, nor did he seem to have much intention of giving it up. However, he continued to glare his indignation at Denny.

"I agree with you," Denny nodded. "Nonsense."

Bazaine seemed taken aback. "But the article in *El Pueblo*."

A newcomer, equipped as all the rest with a glass in

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right hand, had come up, impassive of face and was quietly listening in on their conversation. Vaguely, Denny recalled the face from somewhere, and decided it must have been on telly—some telly newscast.

Denny said to the fiesty Belgian scientist, "As usual with newspaper accounts, their facts were inaccurate. Are you interested in the early trading stations the more easternly civilizations planted here in Spain?"

Auguste Bazaine seemed to think that Professor Land should have recognized his name. He sputtered, "I have done several papers on the subject, sir."

Denny snapped his fingers as though in memory. "Auguste Bazaine, University of Liége. I recall your study on the Carthaginians in Tingis; Tangier as it is called now. Intriguing, Dr. Bazaine." Denny turned to the newcomer. "You are also interested in Mediterranean anthropology, sir?"

The impassive one took a sip of his drink and said with a heavy French accent, but with no amusement to back his words, "I am interested in anything Monsieur Bazaine is, Professor Land."

Bazaine snapped, "Professor Land, Monsieur Andre Condrieu. Miss Yardborough, Monsieur Condrieu. *Zut!* Condrieu, cannot you leave me for a moment? I begin to feel wedded to you!"

"Professor Land's purpose in Southern Spain fascinates me. Dr. Bazaine. Everyone I meet seems to think his expedition nonsense."

Denny pretended to testiness. "It's the confounded news reports. I'll be the laughingstock of my colleagues."

The French Security chief looked at him questioningly.

Denny said, "Obviously, the Etruscans"—he turned to Bazaine—"I am dealing, of course with the city of Volterra, and her port of Populonia, right across from Elba and its iron mines."

The Belgian nodded grumpily. "Their outstanding maritime city-state, of course."

Denny looked back at Condrieu, already obviously out of his depth and hence irritated. "Obviously the Etruscans did not precede the Phoenicians, nor even the Greeks, to Spain. In fact, there is considerable cause to suspect that the Etruscan culture itself *came* from Phoenician, and certainly Greek, backgrounds. I contend . . ."

Bette said suddenly, definitely, to Andre Condrieu, "Zen! This is all I hear, day and night. I thought we were coming to a *party*. Monsieur, could I entice you to acquire some champagne for me, and then to show me about this charming house a bit?" She put her hand on his arm.

"Zut! Yes," Bazaine snapped. "Leave me to my pleasures for a moment, Condrieu!"

Denny went on, as though ignoring this byplay, merely saying to Bette, "Very well, my dear, I am sure you are in good hands." Then, ignoring her and her frowning drafted escort, to Bazaine, "I contend that the Etruscans formed several—at least three—trading posts along the Iberian coast, and possibly right here in the vicinity of Malaga, contemporaneously with the Greek and Carthaginian settlements."

"At what date?" Bazaine rapped.

"I would say approximately 540 B.C. At the same time the Phocaean Greeks were colonizing what is now Marseille."

"Hm-m-m," Bazaine murmured, scowling his doubt.

Bette and her hesitant French escort had gone off, and for a time Denny and the man whose discoveries were threatening the peace of the world, stood alone. The American's mind was racing. This was going impossibly well, but he wasn't sure what to do with the situation. They were at a party, a drunken party at that. Already, others among the guests were standing about, drinks in hand telling off-color stories in voices too high; still others, gathered around a piano, were bawling out songs of yesteryear. It was an ideal condition under which to talk with the Belgian scientist, but what now?

Bazaine was saying, not so dogmatically now, "But, I assume you have some evidence beyond mere speculation. Certainly it is *possible* that Etruscan trading ships . . ."

Denny slipped his hand into a side pocket to emerge with an inch high bronze, highly patinaed but obviously of a warrior of antiquity. He handed it to the other, who was staring. Bazaine put down his drink on the stone ledge next to them, the better to examine the artifact.

"Where did you acquire it?" the Belgian hissed.

"From a peasant in a small town near Tarragona. Salou, to be exact," Dennis lied. The little statue was from his own tiny museum.

"It's a fake!"

Denny shrugged, as though unhappy about the authenticity of the tiny bronze himself. "If so, a fake *Etruscan* piece. And while I might entertain the possibility that a peasant of Tarragona might fake some Roman, Greek or even Carthaginian art object, to sell to tourists, I would not expect him to have access to Etruscan objects to copy."

The Belgian was suddenly decisive. "A microscope would soon delve into whether or not your peasant was taking advantage of your gullibility."

"Admittedly. And as soon as I have returned to my University I will . . ."

"I have a microscope right here in Torremolinos." Bazaine rapped.

Denny's heart was racing now, but his exterior was calm. "Well . . ." he dragged out "The party tonight, of course. Perhaps tomorrow."

Bazaine snapped impatiently. "Tomorrow I return to Paris with Monsieur Condrieu. I suggest we repair to my villa and my study and dig into this matter right now. I fear you have been, ah, *taken* you Americans call it."

"I trust not," Denny said stiffly.

"Very well, then come along." Bazaine glanced around

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in all directions. "We'll have to get out through the kitchens. Condrieu's confounded agents won't let me go to the *salle de bain* without escort."

Denny followed him. This was, he kept telling himself, going unbelievably well. The first night in Torremolinos and here he was alone with the spicy Belgian. He had no doubt whatsoever that if he could get Bazaine off to himself, he could either talk the other into coming out to the yacht, perhaps on the pretense of showing him still other supposed Etruscan antiquities, or, if not, he could abduct the controversial scientist. With Bazaine physically in their hands, the expedition Hodgson had sent them on was a success.

As Denny followed him down a back staircase, Auguste Bazaine said over his shoulder, "I have a small hovercar. We can take that."

Denny rubbed a nervous hand across his mouth. He wondered where Bette was, and how she would take his disappearance. Well, she was a trained Bureau of Investigation agent and obviously capable of taking care of herself. If he could get the Belgian back to the yacht, Zero and he could worry about Bette later.

They emerged into a parking lot immediately behind the Daly villa. Bazaine was saying something which Denny didn't hear. What he did hear was the quick step behind him, but even as he whirled he felt the blow and knew its nature. He had taken a Judo chop to the top of his spinal column, upon whether or not his assailant had pulled the blow depended whether it was fatal.

All turned black.

VIII

When the darkness washed away, Dennis Land found himself staring up into the face of a stranger. A hard, positive face, a heavy scar across one eyebrow, one ear strangely twisted, as though possibly partially shot away long years before. It was the face of a man of perhaps fifty-five, but one in top physical fitness.

There was a buzzing in Denny's head that he didn't like, and his eyes seemed blurred.

A voice said, "You're awake, eh? Good. Zero!"

So, Zero was here. At least he evidently wasn't in the hands of the enemy. He wondered where he was. Not on *La Carmencita,* this was no ship's bunk he was sprawled upon.

The stranger's face disappeared to be replaced by that of Zero Gonzales. Zero scowled down at him, but there was also relief in his expression. "I won't ask you how you feel," he said. "You look like curd, so I imagine you feel the same. "I'll make this brief. Bette saw you going down a back stairway with Bazaine. She followed. When she came out below, she found you on the ground, out like the proverbial light. She and Big Bill Daly managed to get you into a cab, pretending you were drenched. Where's Bazaine, Denny?"

Denny shook his head, feeling highly irritated. His vision was clearing, but his head still rang. "I don't know. How long have I been out?"

"Almost twenty-four hours. We couldn't risk getting a doctor. You sure you have no idea whatsoever about where Bazaine is?"

The stranger's face entered into his scope of vision again. "Any clue at *all.* Any indication of who got him? This is important, Land."

"I . . . don't know what you're talking about. Who're you?"

Zero said, "Denny, this is Joseph Mauser. One of Frank Hodgson's closest men. There've been some new developments. Frank sent Joe out with new instructions, but this tears it."

"*What* tears it?" Denny said, struggling to sit erect.

"Take it easy, lad," the older man growled. "You're still wobbly. Somebody's got Auguste Bazaine. Nobody seems to know who."

Denny was functioning now. He said bitterly, "That Andre Condrieu's got him. He had agents all over Daly's place. They slugged me and grabbed Bazaine."

Mauser and Zero were both shaking their heads negatively. "No. Unlikely, at least. Bazaine was one of their own people. They didn't need to kidnap him, right in their own country. Beside, they'd come to agreement and Bazaine was returning to Paris with Condrieu. It doesn't make sense that The Gaulle's people have him. By the way, when Bette let us know about you being attacked, we immediately took chances and went up to Bazaine's villa to ransack it. We were too late, someone had anticipated us."

"This Yuri Malyshev, or whatever his name is?"

Joe Mauser shrugged heavy shoulders. "Possibly. Though we haven't been able to dig up any evidence that he's operating around here."

Denny wondered where he had seen the older man before. Somewhere. It came back to him. "Major Joe Mauser. Didn't you used to fight in the fracases as a mercenary?"

Mauser looked at him. "A long time ago."

Zero said, "Joe's in Category Government now. Bureau of Investigation, Rank Assistant to the Secretary. Caste, Low-Upper." Zero twisted his mouth characteristically. "Isn't it, Joe?"

Denny shot a look of surprise, if not regret, at the former mercenary.

But Mauser growled, "Yes, but don't let it bother you. I was born a Mid-Lower, and came up the hard way." He lowered himself into one of the room's heavy chairs and looked at Denny. "Are you clear enough to assimilate some developments?"

"I feel like I've got a nest of wasps in my bonnet, but otherwise I suppose so. What developments?"

Zero chuckled sour deprecation.

"Plenty of developments," Mauser told him. "The world's standing on its head. The World Court has been tossed three cases at once. Our government, the West-

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world, has accused Common Europe of planning to build anti-anti-missile missiles and thus defying the Universal Disarmament Pact. We're demanding that Auguste Bazaine be handed over to a world body and his discoveries suppressed. At the same time, and a bit incongruously, if you ask me, we've charged the Sov-world with abducting Bazaine and attempting to secure his device from him with the intent of building it and thus defying the Universal Disarmament Pact."

"Cut it short," Zero said sourly. "What it boils down to is both of them have filed counter charges of the same thing against the West-world, and against each other."

Denny stared from one of them to the other. "You mean everybody is accusing everybody else of having kidnaped this cloddy Bazaine?"

"That's right," Mauser sighed.

"Well, obviously, somebody's lying."

All remained silent for a time.

Denny began to feel a premonition. "Look. what's going to happen?"

Joe Mauser came to his feet and walked over to the window to stare out unseeingly. "Isn't it obvious?"

"The World Court will rule for a trial by combat, eh?"

"Probably," Joe said, his voice low.

"And . . ."

"And you and I and one of the other funkers who sneaked our way through to the very end of the national games, will be nominated to represent the West-world," Zero said, with mock cheerfulness.

Joe Mauser turned and Denny noted a nervous tic at the side of the other's mouth. Mauser obviously wasn't liking this. He said, now, "Willard Gatling, the commissioner of our Bureau, doesn't like to toss this into your laps. But you two are in it already. You know the issues. What's involved. It's possible that during the preparations for the trial, or immediately afterward, or whenever, you might get some opportunity to pick up some information we can use. If nothing else, you've got as good a chance of winning through and defeating the other teams . . ."

"*Teams?*" Denny said.

"It looks as though they're going to judge it a three-way fight. Nine men to go into the arena, three of ours, three from Common Europe, three from the Sov-world. That side which survives, even if it's only one man, wins and will undoubtedly demand that Bazaine be turned over to them. The demand, of course, will either be met or the world will be in flames the following day. To date, the World Court has never been defied. Let's hope it won't be this time."

After they had gone, in order to allow him further rest, Dennis Land, Category Education, Sub-division History, Branch Research, Rank Professor stared up at the ceiling. They had brought him to a small villa immediately to the north of Malaga, which Big Bill Daly secretly kept rented for potential emergency. He imagined their group would remain here, supposedly continuing his research, until further called upon.

Until further called upon.

What in the name of all that made sense, was he, Dennis Land, doing here? The control of his life seemed to have slipped entirely from his own hands.

The Upper who had insisted upon him participating in the national meets, under the threat of seeing him dropped in caste if he refused.

The horror of the meets themselves. For the greater part of his life he had *played* at fighting with the weapons of yesteryear, but never to the point of drawing blood, other than accidentally, a mere scratch here and there. It had been fun, educational, still recreational. It had given him material for his volume on ancient arms. He had no real interest in the professional gladiatorial meets, nor in the governing of the West-world and its international relations. These were things apart. He was wrapped up in his anthropological and historic studies and wanted nothing else.

Yes, it had started with the Upper who had been president of the club to which Denny had belonged. Through a miracle, he had survived the games. And to what end? Only to have Academician Updike dismiss him from the position to which he had won through his own abilities and hard work, his professorship and research. Updike! Another mescaltranc bemused Upper, a hereditary aristocrat.

Possibly Bette, indignant Bette, in revolt against the caste system and stagnation of the West-world, was right. What real use were the Uppers?

Even that hadn't been the end of others controlling his life. Frank Hodgson had seen fit to draft him into the services of his cloak and dagger bureau, as though he had no right of selection whatsoever. Perhaps Zero Gonzales found stimulation in this work. But Zero was the adventurous type by nature. He had evidently *deliberately* gone into the national games, simply to find if he could win, and to gain the prestige involved. Well, Dennis Land was no adventurer, he was, and wanted to remain, a scholar.

And now this. Dennis Land was under no illusions. He could have easily died under the karate blow he had taken at Bill Daly's house, a fraction more power put into the chopping blow and that would have ended all.

But even that was not all. Still he was not to be left alone. This Joe Mauser, evidently another Upper caste, had now appeared on the scene and had given him marching orders he had no desire to take. A representative of the West-world in a trial by combat. Combat to the death, to resolve a problem which tore the world's powers.

Was there no out for him, anywhere, short of death? Was this caste-dominated world he found himself in, never to be satisfied until it killed him?

He rolled over on his side and stared blankly at the tiled wall. Every third tile, he noted, bore a scene from the career of Don Quixote. Don Quixote tilting with the

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windmills; Don Quixote killing the sheep; Don Quixote riding along in his armor, followed by the faithful Sanchez.

Dennis Land fell asleep.

The institution in its orgin went back to legend, or perhaps even myth.

When Tullus Hostilius, the third rex of Rome, was at swords points with Alba, it was decided between the Romans and Albans that it was foolish for large numbers of men to be killed in combat between the two evenly matched cities. Instead, it was decided that each side would choose three champions who would fight, and that side which prevailed would be declared the victor and the defeated city must surrender to the other.

Three members of the Horatian gens were picked by the Romans, and the Albans sent three from their Curiatian gens. In the fight, at first the Curiatii warriors seemed bound to win since in short order they killed two of the Horatii and then teamed up on the third. He turned and fled, and the Albans took up the pursuit. However, so the story went, the Curiatii had not gone unharmed in the fight and each was wounded in varying degrees of severity. Soon, the stronger of the Curiatii had pulled ahead of his kinsmen in the pursuit and the weakest trailed far behind. It was then that the surviving Horatian turned and taking them on, as they came up, killed them, one, two, three. And thus won the conflict and the war. Rome assimilated Alba into her already expanding domains.

History repeats itself. Sometimes as tragedy, sometimes as farce.

Whatever motivated the reges of Rome and Alba to so decide their differences, in the days of the West-world, the Sov-world and of Common Europe, it was pure necessity. War in its old sense, had long since been deemed impossible. The Universal Disarmament Pact had decreed that no weapons post-1900 were to be utilized, or even possessed by the armies, police forces or other armed elements of the world powers. They were not even to be manufactured, nor were there to be plants capable of such manufacturers.

However, there were few so foolish as to believe that given an outbreak of international conflict that all those weapons, forsaken on the treaty table, would not be brought back into usage. The *know-how* of their construction was possessed by all. And while the war might begin using the conventional weapons of pre-1900, when that side which was losing was confronted with defeat who could doubt that it would take such measures as it could to ensure its victory? And once again the factories would start spewing forth their tanks, submarines, bombing planes, missiles, anti-missiles, and, at long last the race destroying nuclear weapons.

So it was that the great powers, and the small, solemnly gathered at Geneva, repowered the World Court, giving it strength never before known to an international body. And so it was that when disagreement between rival powers could not be reconciled in peace, trial by combat was resorted to. And thus far, no power had dared, in the face of world opinion, not to abide by the results of such trial.

On this occasion, for the first time, the combat was three-way. West-world, Sov-world, Common Europe. Only the Neut-world stood on the sidelines. Stood on the sidelines and shivered in the cold blast of threat of war.

Three champions chosen from each power. The combat to take place in the traditional glade of trees, covering an area of one hectare, not quite two and a half acres. Each contestant to choose one weapon, knife, sword, or spear. Of any design, any historic period.

Dennis Land, Jesus Gonzales, and Alex Cameron debated at long length on the selection of their tools of death, and with old pro Joseph Mauser as adviser. Old pro mercenary Joe Mauser, was under no illusions. There was no reason to believe that the combat men presented by Common Europe and the Sov-world would be in any manner inferior to his own team. The chances of any of these three surviving he was well aware, were remote. His was not an enviable position. He would have far rather participated himself. But he had no illusions there, either. Twenty years ago, yes. He would have taken his stand as one of the three. But the dealing of death is a young man's game, as old pro Joe Mauser understood, one does not become an old pro in the game of death by having illusions.

He wrapped up his advice, briefly. "You lads know combat. Each of you fought your way through the national games. Statistically, an impossible thing to accomplish. Very well, fight as a team. Not as individuals. But your first task is to survive. Keep that top in your mind. Don't be heroic, at the risk of not surviving. If it is a matter of coming to the aid of one of your fellows, at the risk of your own life, abandon him. One or more of you has *got* to survive. Has got to be the last man on his feet. You know what happens if this trial by combat is lost."

Alex Cameron, third member of the team, and a professional mercenary and gladiator, looked at Denny and Zero. "If it's O.K. with you, I'll take a boar spear. If can be used either for throwing or as a hand weapon. If we operate as a team, one of us has got to have a spear. Otherwise those curds on the other teams, with spears, could stand back and knock us off from a distance."

It made sense. Denny looked at Zero. "I'm best with a gladius, the Roman short sword with its twenty-inch blade. I'll handle the close in work."

"O.K., with me," Zero grinned, "I'll take a rapier. Some of these Common Europe lads, in particular, are up on their fencing. That Roman short sword might be well enough in close quarters, but some fast stepping molly with a tuck or a bilbo could stand back and cut you to ribbons."

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Joe Mauser said worriedly, "A rapier's on the light side, isn't it, Gonzales?"

Zero looked at him. "Deliberately so. It's all in the point with a rapier. You don't hack a man down with it, you puncture him neatly."

"Most of my own sword experience has been with sabers," Joe Mauser admitted.

Alex Cameron said, "There's no way of knowing what these others are choosing, eh?"

"No," Mauser told him. "Not at this point, but I'll work on it. You'll go in from different entries, as teams, and hunt each other out in the woods. You'll be observed, both from above, and through telly cameras spotted throughout the woods." His lips faded slightly when he came to this aspect of it. "There are always the telly lenses. The greater portion of the population of the world will be tuned in to this fracas. I hardly need tell you."

He took a breath, and shook the expression of disgust from his face. Joe Mauser in his day, had seen many a telly lens zeroed in on him when he was in the dill. Zeroed in on him, its bright eye gleaming as though in hopeful anticipation of witnessing his confrontation of death.

He said, "You go in at dawn and the scrap continues until one side or other has cut down all opposition. In the unlikely case that it hasn't been achieved by sundown, survivors will leave the trial area, to return the next morning."

Mauser looked from one of them to the other. "If you cop a disabling wound, the medics won't get in to you until either the fight is over, or until sundown. You'll have to get by as best you can."

Alex Cameron hissed between his teeth. "That's bad. They evidently don't want to take any chances of a man turning funker and trying to call it quits."

Zero chuckled his usual deprecation. "It's mad, all right. It's worse than the final day of the national games. At least that only lasted for an hour or so, and anyone left alive got immediate care."

They remained quiet, each in his own thoughts for a moment, until the professional gladiator, Cameron, said, "And what do we get out of this, always assuming we get out at all?"

Mauser looked at him. "Needless to say, you'll be top man in your field. Probably bounced at least one caste, issued enough Variable stock to keep you in luxury the rest of your life. And, of course, you'll be a celebrity that every fracas and gladiator buff in the West-world will drool over."

Cameron grunted acceptance of that, with satisfaction.

"All of which things," Denny said evenly, "I desire about as much as I do a galloping case of leprosy."

Mauser looked at him unhappily. "I know," he said, "There's nothing I can do, Land. You three are our best men, and the situation is completely pickled."

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IX

Joe Mauser worked along with them to the very moment of entering the glade. He worked along with them as a mother hen clucking after her brood. He put them on a tough training program, supervised their food, supervised their exercise, brought in a dozen experts highly skilled in the various weapons they had chosen. Supervised them until Alex Cameron, at least, was growling against the restraints.

As an old-time professional, himself, the burly Cameron was familiar with the position he occupied, just previous to this world-awaited battle royal. Had he been allowed to go out on the town, he would have been the toast of Geneva, the focal point of a thousand women anxious to please him, a thousand men desirous of buying him drinks, offering him wealth in exchange for endorsements of products, or ghost-written stories of his supposed career.

But Joe Mauser was having none of that. His team was going to go into that glade at the keen edge of fitness, every possible advantage on call.

When the names of the opponent teams were released, he put a score of top Bureau men to work seeking out their background, digging into their dossiers.

He went over each man, individually, with his three champions. On some, those who had participated in telly viewed combat before, he had films. These he ran over and over again for the benefit of Denny, Zero and Alex Cameron.

"Now get this lad, on the left. His name is Janos Horthy, a Hungarian. This is a deal he fought in Prague two years ago. He's a top swordsman, and will undoubtedly choose a sword as his weapon."

"He's good," Zero growled,

"They're all good," Mauser told him flatly. "You're meeting the top combat men in the world. But watch this Horthy. Watch this bit of business where he drops to one knee and gets under his opponent's guard. There! See? He's the cute type. Has a bag of tricks. Be sure you remember his face."

He ran another film into the projector. "This isn't a combat scene. It's a shot taken by one of our agents from quite a distance, but I want you to remember this one's face."

It was a shot showing a uniformed Russian climbing out of a car and then entering a governmental building.

Zero chuckled. "Zen! It's old Yuri."

Mauser looked at him. "That's right, you've had some dealings with Yuri Malyshev, haven't you? But you, Denny and Alex, note this lad. He's probably the single most dangerous opponent you're going to run into in that grove. The others are trained fighting men, top fighting men. But this one combines that with brains. Look out for tricks. Not just cute combat tricks like you'll get from Janos Horthy, but brain tricks. Don't above all, underestimate Yuri Malyshev. Until he's stretched out dead before you, give him top priority, And then kill him again, because he's most likely shamming."

Zero laughed. "I double that."

Alex Cameron grumbled at him, "You're going to be laughing right up until the split second one of these cloddys sticks his spear in your gizzard."

Zero looked at Cameron. "I hope so," he said.

They had left Bette Yardborough in Southern Spain to track down, if possible, any clues as to the location of Auguste Bazaine, or any indication of who had abducted him, but she showed up the night before the combat trial.

They held a small banquet, rather early in the evening. Joe Mauser wanted them to get at least eight hours of deep sleep. They went through the obvious. Ate well, but not too heavily. Toasted each other and the Goddess Fortune in fruit juice.

All even managed to laugh when the hulking Alex Cameron scowled down into his glass and grumbled, "If I get through tomorrow, this stuff here is the weakest liquid that's ever going to go over my tonsils for the rest of my life. From then on in, it's all going to have a proof content."

They tried to make it informal, and light, but Joe Mauser couldn't refrain from worrying the subject on all minds. He said, in the middle of the entree, "Look. One thing I forgot to mention, although it's obvious. Those other teams are probably going through the same thing we have for the past week. Keep in mind that they've undoubtedly got films of your appearances in the games, back home. If you have any favorite tricks, remember that they know them. That particularly applies to you, Alex, they've probably got films and tapes of you going back for years."

Bette, remarkably quiet for Bette, all during the evening, said suddenly, "Oh, Joe, please." She came to her feet, and left the room.

Denny stood, too, and tossed his napkin to the table. "Pardon me" he said and followed her.

"Hey," Zero called, "don't go making time with my woman, Denny. Not if you figure on leaning on my ample shoulders tomorrow."

Denny found her on the terrace, looking out over Lake Geneva, at the dark waters of the lake, sprinkled liberally with the pinpoints of lights from yachts and other small craft. Joe Mauser had taken the entire upper floor of the aging but comfortable *Des Bergues* hotel on the Quai des Bergues, to house their party, and the view of the lake was superlative.

She didn't turn to see who it was and for a long moment Denny stood there wordlessly. He knew what she was thinking. Tomorrow at least six men would die, possibly eight, conceivably even all nine. The percentages of either he or Zero surviving were bad.

She looked around at him, her face angry. She made an abrupt gesture with her hand. "Look at them. All down there in their snug houses, their comfortable villas,

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their tight, luxurious yachts. And what are they waiting for? To watch you tomorrow, the nine of you, slaughter each other."

Denny said mildly, "I'm afraid it's not just these residents of Geneva. The whole world will be tuned in tomorrow, Bette. However, it's one rung higher than solving international disputes by all-out warfare. It's taken man a long time to get this far."

She snorted her rage. "It's not far enough! There is no reason why this has to continue. It would make as much sense just to flip a coin. What is proved by one of your teams of killers finishing off the others?"

His grin of depreciation was wry. "All right, Bette, you've convinced me. Now if you can just convince all the fracas and gladiatorial buffs in the world, we can call tomorrow off and flip a coin. "I'm perfectly willing."

She shook her head miserably. "I know I'm being stupid, but there's no *need* for it."

Dennis Land looked down over the city, thrusting his hands into his pockets. "I'm afraid there is, Bette. The mob needs bread and circuses to keep them from rising up in their frustration and bringing all society down with a crash. So Zero and I, and the other seven who go into that glade tomorrow, are providing the circus. An excuse has been found to hold the very top gladiatorial meet. A meet even bigger than our annual national games."

She all but wailed, "But that's what I mean. Why have we allowed society to evolve this way? It doesn't make sense. The mob has to have bread and circuses, you say, so that it won't tear our present socio-economic system down. But perhaps it needs tearing down. Just as Rome, in its latter days needed tearing down. It had gone beyond the point where its existence was called for and stood in the way of world progress. And the same has happened to our society, our Welfare State, our so-called People's Capitalism. For the sake of continuing the *status quo,* our stratified society with it's puny number of Uppers at one extreme and a useless mob of Lowers at the other, we put up with things like this!"

"Well, once again, you've got my vote."

She hardly heard him. "It's not just our West-world, it's the whole world. Bogged down. Whatever happened to the world's dreams?"

Zero called from the door. "Hey, Denny. Bed time. We've got a date in the morning, remember?"

Denny looked around at him, and tried to match the other's humor. "Oh, yeah," he said, as though it had slipped his mind.

As he turned to go, Bette said to him, "Goodluck, tomorrow, Dennis."

Zero approached. "O.K. you had your time with her. Now beat it, while I go into my fling. I just thought up a wager. Bette, I'll bet you a king-size buss that I get through tomorrow."

She began to snap something in reply, but Denny failed to catch it. He returned to the banquet room, to find Joe Mauser in a state of excitement. One of his agents had managed to ferret out the types of weapons their opponents were going to use. It gave the West-world team a slightest edge of advantage, to know this far in advance.

But neither Mauser nor Alex Cameron were particularly happy about the choice. The whole Sov-world team had chosen trench knives; the Common Europe trio, javelins.

They called Zero back in, and the three, with Mauser presiding, bent over the table, the dessert and cheese courses forgotten, as they talked strategy. The Sovs would probably plan to make their play in the mostly heavily wooded areas of the grove; the Europeans in the most open. The West-world team, armed with a diversity of weapons, were inbetween.

Joe Mauser's facial tic was manifesting itself. He said, "It's too late to change now. You've put the past two weeks into training with the arms you selected."

Alex Cameron growled, "I'd stick to my boar spear, anyway."

Zero managed to get out a chuckle even under these circumstances, "What am I going to do with a rapier in a patch of undergrowth, or, for that matter against javelins at twenty paces? I felt sure those Common Europe funkers would choose swords."

Denny said slowly, "My short sword is comparable to the trench knives, except it has no brass-knucks built into the hilt. But we're sure as Zen going to have to avoid those spearmen."

Jesus Zero Gonzales went down to death in the first brutal rush.

In the earliest light of dawn, they had entered the grove from the north gate, knowing that the Sovs were coming in from the East, the Common Europe team from the West.

Although not allowed to enter the enfenced grove, previous to the day of the trial by combat, they had pored over aerial photos of the hectare of wooded land, knowing full well that their opponents would be doing the same. As a result, they had a comprehensive idea of the land's layout. The most densely wooded area was almost exactly in the middle. The most open, at the far south.

Joe Mauser had been left at the gate, with last words of advice. "Work as a team, lads. Alex, I've got the feeling you were considering going off on your own, and going to ground, taking a defensive stand and letting the others try to come in on you. Once you're through that gate, you're on your own, of course, but my advice is that you stick together."

Alex Cameron had growled something inarticulately.

Mauser said, "Zero, Alex, Denny. Good luck, lads. Survive, for the West-world . . . and for yourselves."

"Zen" Zero grinned. "That's good advice."

"Let's go," Alex growled.

The strategy of all three teams seemed obvious. If one team could avoid early combat with either of the others,

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the enemy might decimate each other, thus handing victory to the trio that had avoided fight. If the Sovs could find themselves a strong defensive position in the thickets, and simply remain there until Denny and his group and the Common Europe champions had done each other in, they would be able to emerge later and finish off any survivors. So, obviously, was the same situation confronting the other teams. He who fought first, might well never fight again.

They advanced, Indian style, single file with Alex and his heavy short boar spear in the lead. Zero, with naked rapier in hand, brought up the rear.

As soon as they had entered the shelter of the trees, Zero called for a conference. "We're in no danger, yet. They're doing the same thing we are, trying to figure out a way to lie low, until the others have bumped each other off."

Denny said, "This three-way deal has its ramifications. Obviously, if there were only two teams, the thing to do would be find the others and finish them off as quickly as possible. This way, everybody's avoiding the other." Instinctively, even as he spoke, he kept his eyes running about, against possible attack. This early in the day the small woods was still dark. He made out a telly lens, sunk into the hole of a tree, and poorly camouflaged.

Obviously, there would be telly cameras spotted throughout the whole grove, so located that there could be no place where the combat could evolve without being covered for the benefit of the drooling fracas buffs, and their equivalent in Common Europe and the Sov-world. Dennis Land grunted his contempt for the lover of vicarious death.

"Well, one thing's obvious," Alex said sourly. "The Sovs are going to head for the center area, and the others for the south. So where do we go? One thing Mauser said we might reconsider."

"What's that?" Zero asked him.

Alex hefted his heavy spear. "Whether or not we ought to separate. Both of those other teams are going to do what Mauser figured we ought to. Fight as a team. Maybe we'd fool them if we didn't."

"And maybe we'd fool ourselves," Zero told him. "Operating alone, if one of the other teams ran into one of us, that'd be the end. How long do you think you'd last, with that pigsticker of yours, against three javelin men, or, for that matter, against three Sovs with trench knives?"

"I can take care of myself," Alex grunted.

"If you couldn't you wouldn't be here." Zero said, "But you can take care of yourself better with two other lads along. This isn't just another man-to-man combat in an arena. The whole West-world's depending on us to see that device of Bazaine's doesn't get into the hands of either the Sov-world or The Gaulle's people."

"All right, all right, save the speech curd," Cameron growled. "I know what we're here for."

It was then that the Sovs rushed them.

How they had managed to get this close before being detected, Denny was never able to figure out later. Even as he swung to meet the attack, Joe Mauser's warning had come back to him. *Don't underestimate Yuri Malyshev. Look out for tricks, brain tricks, not just cute combat tricks like you'll get from Janos Horthy.*

And the Sov team's strategy came to him, even as they clashed. Malyshev, who was probably in charge, had anticipated the thinking of Denny and his companions. That the Sovs, with their close quarters weapons, would head for the heaviest underbrush where such equipment as javelins, and even swords, would be handicapped. That they'd head for the thickets, and go to ground, making it necessary for the others to come in after them.

Which was exactly what Malyshev didn't do. Instead, he had obviously entered from the East gate and then set off on the double for the North gate to come to grips with the West-world team immediately. Given a surprise ambush, and a quick victory, Malyshev and his men would have not only their own trench knives for in-fighting, but the weapons of Denny, Zero and Alex, as well. It was a desperate try, but a clever one.

The Sovs had evidently crept near, squirmed as near as possible, while Zero and Alex argued, and while Denny's attention was diverted to the argument. Crept as near as possible, and then rushed.

Denny swung, his short sword, the famed two-edged, sharp pointed Roman gladius which had once conquered the world, instantly in use. He could hear Alex yelling a warning, even as the Sov trio smacked them.

Zero Gonzales was the nearest to the enemy, his back turned. He swirled, his long bladed rapier coming up to the defense. Denny had time enough to see the flicker of light on the edge of a trench knife, and Zero's grunt of pain, but then there was no time except for thrust, counterthrust, kick, and elbow blows, thrust and counterthrust, against the dancing, fast moving opponent before him.

In truth, the knife the other bore was almost, in size, as large as Denny's sword. It had the advantage of being a double weapon, brass knucks, and a dagger, but the disadvantage of having a triangular blade, rather than a double or even a single edged one. Denny had no fear of the outcome of his individual part of the fight, if his companions could hold out. His knowledge of his weapon, and its superior quality of having a cutting edge, gave him all the advantage he needed. His opponent was good, but not good enough.

Alex, at least, seemed to be carrying his end of the fight. His bull-like roars were continuing, and his knife-bearing opponent probably was having his work cut out for him, avoiding the professional gladiator's lunges.

Denny side-stepped to avoid a lunge, side-stepped again, stepped quickly forward and jabbed. The sword neatly pierced the other's chest, sliced upward in a ragged gash, even as the Sov fighter screamed his agony.

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At the same split second, Denny felt himself struck from behind. Struck, and then, lightning fast, struck again. He spun, his sword slashing desperately, but the other had bounded back. Denny leaped forward, in immediate offensive, tripped over a root, tried to recover, tripped again, and was down on one knee.

He attempted to struggle erect, quickly; all was seconds, a second was an eternity, and could not be afforded an opponent. He felt the cruel ripping edge of the brass knucks crush into his face and all went haze. He could hear Alex roaring in the background, someone else screaming in pain and then even the haze went black.

He felt he couldn't have been unconscious more than moments. Minutes at the very most. He opened his eyes, only to slits. If the Sovs had prevailed and now noticed signs of life in him, they would be quick enough to finish him off.

But the only figure he could make out still erect, bore the uniform of the West-world. He opened his eyes wider, and began struggling to his feet. It was Alex Cameron, his back to a tree, his boar spear in both hands being used as a pike, his eyes darting about, as though in fear of further attack.

Denny lurched erect and tried to take stock of himself. He was bleeding from several wounds and his face felt crushed. One eye seemed completely blind, but that might be only blood.

Cameron stared at him, "I thought you were dead."

"Where are they?"

Alex Cameron gestured with his head at Denny's first opponent. "One's dead. Two took off, back into the woods. One wounded. They took Zero's sword, but had no way of getting past this spear of mine and evidently decided not to try."

"Zero," Denny said.

The professional gladiator gestured again with his head.

Zero was sprawled on the ground. Denny hobbled over to him trying to dash the blood from his blinded eye.

He came to his knees. The other had taken a half dozen or more knife thrusts in his belly and chest. Dennis Land in the past months had seen enough men in their last moments of life to know sure death when he saw it, even though Zero's eyes flickered open.

Zero grinned at him. "That . . . curd, Yuri . . . got even for that scar I gave him in Japan . . . eh?"

"Easy," Denny muttered, "I'll get some bandages on . . ."

Zero had closed his eyes again. Now he reopened them. Blood trickled from the side of his mouth. "Listen . . . Denny tell Bette . . ."

"Yes . . ."

But that was all.

Dennis Land stayed for a long moment there, on his knees, his face naked of expression.

He felt difficulty in getting back to his feet again. He was going to have to take care of his own wounds. As yet, he didn't know how bad they were.

Alex Cameron was standing watching him, questioningly. He held Denny's Roman gladius in one hand, his boar spear in the other.

Denny took a deep breath, "Better let me have my sword. The Sovs might come back, or, for that matter, The Gaulle's team is somewhere around."

Cameron shook his head slowly, but definitely.

"What's the matter?" Denny demanded, uncomprehending.

Cameron said, "With both this spear of mine, and your sword, I'll be able to make out. I didn't even get a nick in that fight. With both a sword and a spear, I can survive."

Denny stared at him. "But then, I wouldn't have anything." *He didn't get it. But then did.*

The professional gladiator muttered, "Sorry, professor. That's the way the ball bounces. You've had it anyway. If we ran into a fight right now, you'd be more trouble to me than good. As it is, I'll get by."

Denny stared at him.

Cameron growled, defensively "You remember what Mauser said. If it's a matter of coming to the aid of one of the others, at the risk of your own life, abandon him. I'm afraid that's it Professor." He turned on his heel and went off, walking in a half crouch, as men do in combat, peering to the right and left, suspiciously.

Dennis Land shook his head to achieve clarity. Not six feet away, a telly lens gleamed dispassionately at him. He snarled at it.

They had brought a minimum of equipment other than their weapons with them, deciding that the added maneuverability achieved by disposing of weight was more desirable than food, or even water. However, each had a very small first-aid packet. Denny fished his out of his clothes, and then, overcoming his distaste of touching his friend's body, that from Zero's pockets.

He made his way over to the fallen Sov combatant and found that he had carried a small canteen. He took it up. At least it would be full, this early in the day. He had hoped for water, but it contained vodka, or some other ultra-strong spirits. Denny took one swallow, used the rest with his handkerchief to swab out his cuts about his face, and to cleanse his other wounds.

They were bad enough, but not as bad as he had first thought. At least, for the time, he would live. Perhaps the vodka was better than water would have been, at that. It made for a better cleansing agent.

He used up all his bandages, then approached the fallen Sov again. It had come to him that he hadn't seen a trench knife in Alex Cameron's possession, before the other had deserted him. Maybe it was somewhere about the corpse.

But no it wasn't. Evidently Yuri Malyshev and his surviving team had taken it along with them. That would

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mean they possessed three trench knives and a rapier.

As yet, there had been no sign of the three javelin-men of Common Europe. Probably they were to the south. But probably not. In the same manner in which the Sov-world team had done the unexpected, perhaps The Gaulle's champions would attempt some surprise strategy.

He decided to escape from this vicinity. The sounds of the fighting, Cameron's shouts, and the screams of the wounded, would have carried all over the grove. Possibly the Common Europe team would make for the spot, figuring that the West-world and Sov-world teams would have largely eliminated each other. Well, they would be right. He stumbled along a narrow path, realizing that the more sensible procedure would be to avoid paths and stick to the most heavily wooded sections of the two and a half acre sized battle ground. But it was the most he could accomplish to walk again even a path. He wished he had taken another slug of that vodka, rather than using it all for washing.

For a time, he railed against Alex Cameron. The funker, the curd! He'd not only deserted a team mate, but had stolen his weapon as well.

But then he realized that the other had been correct. Their job, Denny, Zero and Alex Cameron, had been to win this trial by combat. To win for the West-world. Nothing else made any difference. There were no gentlemen in this bloodbath, no honorable rules of the game.

However, Zero wouldn't have done it. Nor would he, Dennis Land, have done it, either to Zero or to Cameron.

Professor, the other had called him, just before the desertion. *Professor*. Had he detected an edge of contempt there? The contempt of the slog for he who has made a mark of achievement in the world of intellect?

What difference did it make, what motivated Alex Cameron? The fact was . . .

Denny Land brought himself suddenly alert. He'd been letting his mind wander. Instead of watching for his enemies—and there were five of them, so far as he knew, still in these woods—he'd been daydreaming.

He shook his head. Now he wished he hadn't taken that slug of spirits, no matter how good it had seemed at the time. It had merely intensified his thirst and his thirst now was raging.

The thin trail he was following opened into a small glade, and Denny stumbled through before catching, in his hazy vision, the other who stood there.

It was Yuri Malyshev, alone, but armed with spear, rapier, and two trench knives. He was looking at Denny strangely.

X

The Russian took in Denny's obvious physical condition. He said, slowly, "So, Professor Land, we finally meet."

Denny attempted to wet his lips, found his mouth contained no moisture. He went into the Hachipi-dachi, spreadout position, and waited defensively, his right foot slightly forward, both fists clenched, knuckles downward and held slightly to the side of his waist.

The Russian was shaking his head. "I, too, am familiar with karate, professor." He brought one of the trench knives from his belt, flicked it up into the air and caught it by the blade when it came down.

It hadn't occurred until this moment, to Dennis Land, that the trench knives the Sov-combatants had chosen, were not just two weapons in one, but three. It was capable of being utilized as a throwing knife.

The Russian agent was deceptively fast, considering his size. He made his cast in a blur of speed, and for a brief second Dennis Land's only thought was one of resignation.

Then, immediately behind him, he heard the tinkle of glass.

Malyshev said, then, "Unless I'm mistaken, that's the only telly lens capable of zeroing-in on us, at this particular spot. And the area is too shaded for the cameramen in the hover-planes above."

Denny could only stare at him.

Malyshev said, "I want to know just one thing. Who has Auguste Bazaine?"

Denny shook his head, continued to stare, completely befuddled by this. "You have him. You and your men got him from me in Torremolinos."

But now it was Malyshev who was shaking his head. "No. I observed developments from a distance, through binoculars. You entered the parking lot behind William Daly's, your agent's, villa with Dr. Bazaine. Then two men attacked you and left you unconscious. With the help of still a third man, they hustled Bazaine into a waiting car. Moments later, your agent Bette Yardborough came up to your assistance."

Denny grunted, "What difference does it make? The Gaulle's people have him, then."

"The difference is this," the Russian told him. "Neither the West-world nor the Sov-world wishes to unbalance the present international situation. In this regard we are in agreement. Common Europe does, it wishes to expand into the Neut-world for markets and raw materials. For some reason, which I can't understand, they've kidnaped their own man. Possibly The Gaulle became impatient with Bazaine's temperamental sulking, and has him under duress, possibly torture. Our interests at present coincide."

Denny Land was beginning to get a glimmer, to realize why the other had thus far failed to dispatch him, and why he had broken the telly lens. He said slowly, "What is the standing of the trial by combat, thus far?"

The Russian nodded, seeing that the American was beginning to follow him. "You and I are the only survivors of either of our teams."

"Alex Cameron?"

"Went down with a javelin through his guts. He took his opponent with him." Malyshev hefted his spear. "That's where I got this."

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"Then there are two remaining Common Europe men."

"And two of us," Malyshev said simply.

Dennis Land looked at him.

There came back to him, all that he had heard of Yuri Malyshev these past weeks. Bette saying, *The most competent and certainly the most ruthless, uh, hatchetmen, they used to call them, of the Chrezvychainaya Komissiya;* Zero saying, *Don't underestimate Yuri Malyshev. He's no cloddy. He's deceptively easy-going, even gives with an air of being slow moving. Just remember, he's possibly the most dangerous agent Korda has at his command;* Joe Mauser saying, *Look out for tricks, brain tricks . . . he's probably the single most dangerous opponent you're going to run into in that grove.*

Denny said, "I don't trust you."

The Russian was able to laugh. A short, choppy laugh. "I don't blame you, Professor Land. However, you have no alternative. It would be easy enough for me to finish you off now. But the thing is, our interests coincide. You of the West-world have a word for it. We're in the dill, Professor Land. We co-operate, or we go down."

"You're at least as highly skilled a fighter as these Common Europe lads. Why don't you simply finish me, like you say, and then take your chances with them?"

"Because the world can't afford any chances, professor. Either the Sov-world, or the West-world, has got to get Bazaine and suppress his discovery. I would naturally rather it be the Sov-world. But if not, at least your nation isn't going to upset the balance of power.

Denny said slowly, "This is supposedly a three-way fight to the finish. By the rules of the game, we're not allowed to co-operate . . ."

Yuri Malyshev gave his short chopping laugh again. "I assure you, professor, like most in Sov-world government, I am a student and admirer of Niccolò Machiavelli."

"What happens when and if we eliminate the others?"

The Sov-world agent, ran a finger down the side of his face, tracing out a scar, the scar, Denny remembered that Zero claimed he had put there. In turn, the Russian, not a half hour past, had killed the irrepressible American. Yes, it came back to Denny now. It had been Yuri Malyshev who had killed Zero Gonzales.

Malyshev said slowly. "We could then fight it out between us."

Denny grunted in contempt. "You're in better shape than I am. You want to let me live just long enough to help pull your chestnuts out of the fire then finish me."

The Russian was nodding. "True. Obviously that isn't a fair alternative. What would you suggest?"

In spite of himself, Denny felt drawn into this scheme. If nothing else, it meant at least immediate survival. He said, "It must be something so that both of us live."

"All right," the Russian said decisively. "The rules of the match are that we fight on until only one or more of the same team are still on their feet. We will endeavor to eliminate the common enemy, then we will sham a fight between us. One of us will go down, in supposed defeat. The other will then be winner of the trial by combat, and the medics will dash in to save the wounded."

Denny said slowly. "Fine. But which one of us shams defeat and allows the other to be proclaimed winner?"

They stared at each other. Stymied.

The Russian agent's face worked. He said finally. "You can be the winner, with the understanding that following the fight, you and your Joseph Mauser will meet with me and Zoltan Korda my immediate superior, and iron out our difficulties behind the scenes, and on an equal basis."

He's probably the single most dangerous man you're going to run into in that grove . . . Look out for tricks, brain tricks.

"All right," Denny said. "You're on. We co-operate. Now let's divide up those weapons."

But the Russian was considering him. "You're more badly wounded than I thought, Professor Land."

"I can still operate," Denny said defensively.

"But not well enough. You have, what do you of the West-world call them? Pep pills?"

"No," Denny shook his head. "They're against the rules of the trial by combat."

Yuri Malyshev grunted amusement, and unscrewed the bottom of his remaining trench knife. Three white pills fell into his hand. He offered them to Dennis Land. "You'd better take all three. They'll bring you to a peak of efficiency for possibly half an hour, but then you'll collapse. A half hour should be enough."

Denny took the pills, looked from them to his new ally.

"They could be poison."

The Russian chopped out his sarcastic laugh.

Denny took them into his mouth. They had a bitter taste, something like aspirin. He had difficulty getting them down, his mouth and throat dry as they were. They had no immediate effect, he still felt desperately weak.

"Now, how do we divide the weapons?" he demanded.

The Russian considered. "We have two trench knives, a spear and this fencing sword. I suggest we both take a trench knife."

Denny said, "I've been training with a sword. Not a rapier, but still a sword. I suggest I take that."

"Very well." Malyshev handed over the knife and the rapier originally carried by Zero Gonzalez. He went to the destroyed telly lens and recovered the second trench knife.

"How are we going to explain what's happened here?"

The Russian shrugged. "I'll simply tell them that I threw my trench knife at you and missed, breaking the telly lens. Then you rushed me. I stumbled and you grabbed a sword and trench knife and ran off into the brush before I could throw my javelin at you."

"Good enough," Denny said. He hefted the sword. Already strength was beginning to ebb through his veins. The rapier felt light, after his short sword.

Yuri Malyshev's face worked in thought. "We're going

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to have to get going. Already we've been here, off lens, for a suspiciously long time. The two Common Europe men are probably in some defensive position. They've lost a man, and have witnessed two deaths on our teams, but for all they know, they still have four enemies on their feet. We'll have to seek them out."

"Right," Denny said. "Suppose I head east, and then south. You head west, and then south. When we join combat, we first take them on. If and when we finish them, if we both survive, we turn on each other. I clobber you one, say with the trench knife, and you pretend to be knocked unconscious."

"Very well." The Russian turned quickly and disappeared into the trees to the west.

Denny looked after him for a moment, then turned on his own heel and retraced his movements along the path for a hundred feet or so, and then turned south.

His strength was completely returned now.

He made his way carefully now. With the trees this thick, he had no great danger from the javelins but he knew that the Common Europe champions were also in possession of Cameron's short boar spear, handy as it was for close-in work, his Roman short sword, and one trench knife, a sizable arsenal. Actually, they had an edge on him and Malyshev.

Denny made his way carefully, senses highly alert. He wondered at the efficiency of the drug the other had given him. Give the Sov-world credit for development of such. When it came to the devices of espionage-counterespionage, they had them in profusion.

He spotted the two nervous Common Europe champions before they spotted him, and slipped behind a tree to devise strategy. They were in what amounted to a clearing, at least as near to a clearing as the wooded hectare provided. They were standing, back to back.

Malyshev had been right. These two had no idea how many opponents still remained.

And then, Denny made out what he was looking for. A slightest stir of movement in the thicker woods to the far side of the glade. It could only be his reluctant ally. He had to admire the training the Sov-world men had evidently gone through pertaining to woodsmanship. They had done a superlative job of sneaking up and ambushing Denny and his team, in the earliest moments of the fight. Now here was Malyshev, snaking through the trees invisibly. Hadn't Denny known what he was looking for, and the general direction from which the Russian would be coming, he would never have detected him.

Now the problem was to co-operate with the other, but in such wise that the million-multitude watching on telly, all over the world, would never suspect. Given such suspicion and the fat would be in the fire.

Denny glanced upward. There was a hovercraft not fifty feet above the glade. He could make out the excited telly reporters, their lenses zeroing in on every aspect of the rapidly developing situation below. Nor were they all, of course. There would be other lenses, on the ground, spotted here and there working automatically. Oh, this trial by combat was covered as though by blankets. Not a motion but would be caught.

Dennis Land had to make his play. The pep pills were so geared as to give him a half hour of top performance. He couldn't afford to allow their power to fall off until the action was over.

He darted forward from his position of hidden vantage behind the one tree, to another, as though attempting to get nearer to the Common market duo without them seeing him.

But his movement, as it was meant to be, was spotted. They both turned in his direction, apprehensively. They had seen him, but knew not if he was accompanied. He pretended he didn't realize they had made him out, and hustled forward to the shelter of a tree still nearer.

He had their full attention now, at least for a second or two.

But the two champions of The Gaulle were neither inexperienced, nor fools. It struck one, almost immediately, that Denny's movements might be a distraction or feint. He began to whirl, to check behind him.

Too late! On his feet, dashing toward the two, was Yuri Malyshev, javelin in hurling position, lips back over his white teeth in a grimace of physical exertion. He came within casting distance, threw, then fell to the ground and rolled.

The spear caught the second of the two in the shoulder, throwing him back and to the ground. The other, unbelievably quick of reflex, made his own cast, and missed the rolling Russian by sheer inches. Malyshev bounced to his feet, and wrenched the fallen javelin from the sod. The point had been broken. He threw it aside and pulled his trench knife and came in, in a knife fighter's crouch.

Denny Land was making his play now. He came running forward, rapier in his right hand, the trench knife held as one would hold a poinard, in his left.

The Common Europe champion, whirled, his face in dismay. His eyes darted to the javelin of his fallen comrade, but there was obviously no time. He pulled from his belt the Roman short sword, which had originally come into the grove in Denny's hands, and backed rapidly, seeking a refuge where he could meet his opponents one at a time.

They came in on him as though rehearsed a dozen times. Denny feinted, his rapier, considerably longer than the other's short sword, flicking in, and all about. The other, desperate, chopped, and chopped again at the fencing blade. By the luck of a wild blow, he succeeded, and Denny's sword broke, an inch from the hilt. He dropped it, and bore in with the trench knife.

But it was Yuri Malyshev who struck the other down. His triangular blade stabbed deep into their single opponent's back . . . and the man screamed his agony . . . stabbed again, and the other began to fall even as he attempted to whirl to meet his second assailant.

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Denny plunged forward at the other, swinging the trench knife, now being used in its aspect as brass knucks. He connected against the Russian's left cheek, ear and temple, and the other dropped as though poleaxed.

Denny stooped quickly and picked up the Roman short sword, dropped a moment earlier by the last Common Europe champion. His eyes darted about the clearing. All were down, except him. The one Malyshev had speared was threshing out his death throes, twenty feet away. The second was already dead, undoubtedly one of the Russian's blows had hit his heart.

Denny looked down at Yuri Malyshev, unconscious but still breathing, breathing heavily.

The point of the short sword hovered over the Russian agent's unprotected throat. No one else could testify to the deal the two had made. If he finished the man off, the trial by combat was won, won by the West-world and no tags.

Besides, this was the man who had killed Zero Gonzales.

Dennis Land shook his head, and tossed the sword aside. He spread his arms, palms up.

A voice boomed from the hovercraft and out over the grove. "All your opponents are felled, Dennis Land. Make your way to any of the enclosure's four gates. You need only to walk out, on your own feet, to have won the trial by combat."

The nearest gate would be the West Gate, through which the Common Europe team had originally entered. Denny began to stride in that direction. It could be no more than a hundred feet or so.

And it was then that the potency of the pep pills began to fall away. Malyshev had warned him. A half hour, and then he would collapse. He set his face in a grimace of determination and stumbled forward. He considered attempting to run. No, already his eyes were clouding. A sudden suspicion came. Had the Russian, in truth, poisoned him? Did the pep pills give you a last lease on life but end in death? No. No, that couldn't be it. The Sovs had brought those pills into the grove on the off chance of needing them themselves.

His legs were buckling. He could make out the high wire fence which surrounded the fighting grove. It was before him. Short yards away. But where was the gate? He had to get through the gate on his own feet. If he failed. If none of the combatants were able to leave the grove under his own power, the whole trial was a draw and must be fought over again.

Fought over again! He suppressed a cry of pure anguish.

His eyes were dimming. His legs were as water.

He made out the gate now. Farther down the fence. Perhaps thirty feet. No more.

But thirty feet were as though thirty miles to Dennis Land. The black flooded in, and he stumbled forward, came to his knees and then pitched onto his face, unconscious.

(To Be Concluded)

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GUTTERSNIPE | RICK RAPHAEL

People who work at dirty, nasty jobs are frequently demeaned; those who impose limiting disciplines on others are cordially detested. When both are combined in one person—

In the fall of the fifth year of the Great Drought, Federated Global Water Authority was born of man's fears of the future and his thirst from the past. Into FGWA passed absolute control, for it ruled over the Earth and all that was above and below to the outer and inner limits of the hydrosphere. Barring nova of the sun, neither the malevolence of Man nor Nature would ever deprive Earth of the use of its precious envelope of water.—Gorsky's "Environmental Management Techniques of the Twenty-Second Century."

Fourth Officer Gordon Ascot scooted off the mid-speed slideway with the practiced hop of a megalopolis commuter. He crossed the slow-speed slide to an island interchange. As he shouldered his way through the cross-traffic he pretended not to see the furtive nose-holding and cold hostility engendered by his uniform.

The words of First Officer Ray Halleck flashed to mind. "Nobody wants his daughter to marry the garbage man or the sewer cleaner. That's what you are, a sewer rat."

Ascot eased his way onto the moving crosswalk and noted with rising anger that those nearest him were edging away. At twenty-four, with less than a year in service since winning his FGWA commission, Gordon had yet to learn to ignore the overt scorn that the man on the street held for the Sanitation Division. He glanced down unconsciously at the wide red Sanitation Division band circling his chest. It almost matched the tousled hair that flared from beneath the cockily-perched service cap. A few vagrant beams of sunlight penetrated to this lowest deck of the topside streets but the tubelights mimicked the warm, yellow glow of day. The light glinted on the single, narrow silver band of his rank circling the upper arms of his blue uniform tunic.

He choked angrily as a pair of teenaged boys eyed his uniform and then pretended to be seized by coughing spells. They whipped out dirty handkerchiefs and held them to mouth and nose and pointedly pushed away from Ascot.

Gordon caught himself and stared stonily ahead, his eyes unfocused and mind turning back to his first briefing with Halleck.

"Since the beginning of time," Halleck had told him,

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"there have been three occupations that have failed to win public admiration. No one has ever loved a tax collector, a cop, or the garbage man. You'll soon find out, I know, that in the eyes of the public, you're a combination of all three.

"Everybody pays for water and the support of the Authority. And everyone's life is now both conditioned and controlled by the dictates of Water Authority. The man on the street knows deep down inside himself that we are his only hope of survival. That doesn't mean that he's grateful. On the contrary, he's resentful of the hard, cold fact that without us, he's incapable of controlling his own greed and filth. So you have two strikes against you the minute you put on that blue uniform. Add the red stripe of Sanitation and now you're a whipping boy."

The public had another name for the men who worked deep beneath the city-states, milking every drop of usable moisture from the contaminated wastes of humanity. It was an archaic, derisive title that had its origin in the earliest days of modern history, when waste waters actually flowed in the open through the streets, channeled by low stone walls.

"Guttersnipe" was the label the public pasted on the Sanitation Division.

"When you think of it," Halleck said, "it's not a bad analogy. A guttersnipe was a man or boy who salvaged spoiled and contaminated items from the channels in which the waste waters ran. That's just an over-simplification of what we're doing today. We're saving the water itself, since it has to be processed and it's cheaper to reclaim it than pumping billions of tons of desalinated sea water around."

After a week's leave topside, Fourth Officer Gordon Ascot was returning to that salvage operation.

He stepped off the slideway at the entrance to FGWA's Munson Station. He walked quickly through the administrative offices to a bank of personnel tubes at the end of the hall. Gordon punched the button for his level and the car dropped down the shaft. As he sped downward on the pneumalift, he caught brief glimpses of the other subterranean levels that were the domain of Supply Division.

Six hundred feet beneath the surface of the megalopolis, the car stopped and the transparent plastic door slid open. Gordon stepped out into the recreation room of San Div. A half-dozen men lounged about the book-lined room. Pastel green tubelights cast a cool, yet comfortable, glow over the area. The quiet sounds of a symphony drifted from wall speakers but failed to drown out the ever-present hum and throb of the massive pumps at the work level a hundred feet deeper into the earth.

Gordon crossed the rec room, heading for the section office to check in for duty and find out to what shift he was being assigned.

"Is there really a world up there, Mr. Ascot," a thin-faced technician called out as Gordon passed him, "or is it just some more recruiting propaganda to make us re-enlist?"

Gordon grinned. "It's really there, Fred."

"Got to see it for myself some day," the tech replied. "I hear that on a clear day you can even see sunshine."

A chunky, crop-headed Third Officer, wearing the sunburst insignia of a radiation specialist, lowered the book he was reading and smiled.

"Don't let him kid you, Gordy," the radiation officer said. "Ever since Fred found out that Supply is using girls as computer ops and clerks on the upper levels, he hasn't gotten closer than two hundred feet to the surface in the past year and a half."

"That's not so, Mr. Baker," the tech retorted. "I spent all of last free period on Two Level and that's just fifty feet from topside."

RadSpec John Baker smiled. "And what's on Two Level, Fred? Blonde or brunette?" he asked.

"Redhead," Fred drawled with a grin.

Both officers laughed. Baker put his book back on the shelf and followed Gordon to the door of the office.

"Have a good time, kid?" he asked.

They entered the office and Gordon punched his ident button on the section roster board. The blue light that had been illuminated beside his name, signifying he was both off-duty and off-station, shifted to green "on-duty, on-station" status. Then "3F" flashed up next to the green light: Third shift, filter crew.

Gordon noted the shift and assignment then replied to Baker's question. "I guess I had a good time, Johnny. The usual things, a couple of shows, a couple of girls. But it seems as though there's less and less room to move and less air to breathe every time I go topside."

They turned and walked down the hall to Gordon's cubicle. Baker sprawled on the bunk as Gordon changed out of his blue dress uniform into working whites.

"The trouble with you, Gordy," John said, "is that you've gotten spoiled by living and working in such spacious areas."

Gordon eyed the small cubicle that afforded him his lone segment of privacy in the close confines of SanDiv.

"Yeah," he chuckled, "I guess that's it. I'm just spoiled by all of this. Anything exciting happen while I was gone, Johnny?"

"Oh, we had a thrilling experience day before yesterday," the chunky specialist replied. "Chuck Matthews isolated a new strain of coliform bacteria and some clown in Supply dumped a bottle of cheap perfume in the air recycler.

"You know better than to ask if anything exciting ever happens in the sewer. The answer is 'no.' "

Gordon was hanging his blues in the locker when the section chief stuck his head in the door. First Officer Ray Halleck was tall and lanky with a perpetual look of worry engraved on his angular face. Behind the facade of concern was a spring-trap mind and a dry humor that kept his section crews constantly swinging between belly

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laughs and wondering whether the old man was kidding them or not.

"Glad to see you back in one piece, Gordon," Halleck said. "When you get through, come up to the office, please. Something I want to talk to you about." Halleck glanced at Baker. "You come along, too, Johnny. This may be up your alley. See you both in a few minutes."

Halleck vanished up the corridor.

"What was that all about?" Gordon asked.

Baker shrugged. "With Happy Halleck who knows? You about ready?"

Gordon nodded and the two men left the room for the section office.

Seated across the desk from the junior officers, Halleck sprawled back in his chair and eyed Gordon.

"Pick up any rumors while you were topside, Gordy?" he asked.

"Nothing unusual," Gordon replied. "I got the usual static and the usual lousy room when I checked into the hotel in uniform. I changed into civvies and then checked out that same afternoon and went to another joint where they didn't know I was a SanDiv officer. People don't love us any more than they ever did, perhaps a little less. But I didn't pick up anything out of the ordinary. Why, skipper? Something wrong?"

"I dunno,'" Halleck replied thoughtfully. "We received a copy of a report from Health Div showing an internal medicine type of illness upcurve in Claremont Station sector. Nothing that the people would pick up and worry about but enough to register on our curves. The health people say it may be the result of some sort of contaminated intake, food, water or air. Chuck Matthews has a wild notion that it might be some form of radiation sickness. The thing's in too early a stage to confirm but I passed Chuck's theory along to Health for whatever it was worth. I thought you might have heard something about it while you were topside."

"Not a peep, skipper," Gordon shook his head.

"Any chance that we could be passing hot stuff in the effluent, John?" Halleck queried.

"I don't see how," Baker replied. "We'd get such a screaming register if any of our material sources were leaking that you couldn't hear yourself think down here."

"I know, I know," Halleck said with a sigh. "But do me a favor and make a personal check when you go on shift today. I know you won't find anything, but my conscience will sleep easier. All we need right now is for something like that to happen and those topside idiots will be on our necks.

"I did hear one thing, skipper, while I was up," Gordon said. "Some crackpot was spouting off in the central rec area about the evils and dangers of irradiation of sewage wastes and recycling irradiated water. Said it was another abridgement of human freedom and as morally wrong as fluoridation was in the Early Atomic era. What was fluoridation?"

Halleck grunted. "Those crackpots are the same fools that led people into the Water Riots. And I think fluoridation had something to do with primitive water treatment back in the Eighteenth or Nineteenth centuries. The same kind of crackpots you heard topside got people all riled up by saying that the scientists of those days were trying to poison the children by adding control chemicals to the water. Those ignorant fools would love to have something go wrong with our treatment recycling. They'd start dumping fusion bombs down the air vents."

Halleck looked at the chrono. "Almost chow time," he said. He turned to Gordon. "What shift are you on?"

"Filter Three."

"Didn't you major in radiation at the academy?" Halleck asked.

"I did," Gordon replied, "but there were no vacancies for RadSpecs when I graduated and I drew assignment to bio-solids controls."

"I may shift you into John's crew if this thing keeps up," Halleck said. "Right now, let's go eat. You two go on shift in an hour."

An hour later, Gordon stepped off the lift at the lowest level and was greeted by the muffled roar of the pumps and filter chambers. Filter Control headquarters was a high-ceilinged, plastisteel vault, flooded with blue-white light. The watch officer's console stood in the middle of the floor while auxiliary consoles were banked along three walls. Six techs manned the side positions while the team NCO and two floating techs kept roving watch.

Gordon relieved the officer on duty and slid into the controller's console seat. He spent ten minutes, longer than usual, thumbing through the log to bring himself up to date on the operations of the past week. Satisfied that nothing unusual had occurred that required special handling, he turned to the standard watch check-off list.

Five inches from the far wall of the control chamber, eight million gallons of waste waters churned every hour through ducts big enough to float an ancient warship. The more than two million persons living and working in Munson Station sector were just a small segment of the total population of the three-hundred-mile-long megalopolis. Throughout the entire subterrannean strata of the city, thousands of water arteries carried recycled and reconstituted life to hundreds of thousands of living quarters and business and industrial users.

Like the coronary system of the human body, the lacework of vessels fed the sprawling urban areas. The arteries carried clean water to the people, breaking down into smaller capillary systems within the towering dwelling hives.

Capillary veins emptied back waste waters into other outflowing sewage drains that poured downward to the lowest levels to be filtered, radiated and biologically treated before being pumped by multi-thousanded nuclear hearts back to a new sector of the city.

Munson Station Supply Division channeled the re-

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cycled waters of Edgewood Station's wastes. Munson Station Sanitation Division cleansed and purified its own waste waters and sent them surging into the Supply arteries of neighboring Claremont Station.

Fourth Officer Gordon Ascot began his Filter Section check-off, reading flow meters and massometers showing both the volume of sewage flooding into the great filter chambers behind the control-room walls and the quantities of solids per cubic meter being carried in the late afternoon flow.

A thousand feet above him in Apartment 6B312 in Claremont Sector, the twenty-eight-year-old wife of a transportation clerk suddenly gagged and staggered to the bathroom to vomit. She slumped over the toilet until the wave of nausea passed and then dragged herself weakly to her bed. In the front room, her small son began crying as stomach cramps seized him. His moans went unanswered as the child doubled over in pain.

In the next five hours a thousand more were to be similarly affected. Computer ops broke out in cold, damp sweat; personnel clerks doubled over at their desks; teachers fled from their classrooms to the sanctity of restrooms while many of their pupils were carried to health offices and then sent either home or to hospital wards.

The reports of the epidemic began filtering into Health Div Control within minutes of the first-treated seizures and Med teams were sent racing through the sector to begin the urgent task of isolating the cause and quarantining the dangerous areas. Two hours after the first reports it was evident that the problem was not one of small isolation. Cases were being reported from every section of Claremont Station and for the first time in half a century, Med-Health controllers began throwing up total epidemic quarantines for the entire sector.

Deep beneath the sector to the north, Gordon Ascot completed his check-off and began the first of his video checks of the intricate filter apparatus in the adjacent chambers. He switched to the screen rooms and the six monitors on his console flashed up with the flow continuity at Number One Screen. The turgid, surging torrent boiled into the wide-meshed moving screen and deposited the largest pieces of solid matter being carried in the sewage flow. The one-hundred-foot wide belt screen extended like an openwork door across the entire width of the mouth of the first filter chamber. Day and night it rolled upwards from the bottom of the chamber to the scraping floor above, its latticework plastered with chunks of debris and vagrant sheets of paper and plastic that had escaped from industrial disposal operations topside.

Strained of its largest solids, the still putrid and filled waters smashed into a baffle and torrented off at an angle into the second, third, fourth and fifth set of similar screens, each with a smaller mesh than the previous one.

Gordon ran the sequence of the five screen traps and switched to the scraping and compressing rooms above the screen sets. The continuous belts of screens met endless belts of scrapers and high-pressure chemical sprays that cleansed the meshes as they rose with their filth from the sewage waters. The solids were carried into the compression chambers, packed tighter and tighter to squeeze the last possible drop of moisture by mechanical means. From the compression chambers, the pressed blocks of solid wastes passed on conveyors to the furnace driers where the absolute last molecule of wetness was condensed off and returned to the recyclers. The residual ash moved back to the surface to chemical fertilizer plants for conversion and shipment to the agricultural complexes outside the megalopolis.

Screened and strained, the sewage waters flowed into vast settling basins where the waters were loaded with chemical precipitators, biological organisms and then run through additional filters. Neutralizing tanks beyond the filters removed the harmful chemical additives and then the waters gushed through thick, shielded ports into the radiation tanks. Twenty bands of radiation beams girded the length of the half-mile long tank. Fingers of bacteria-killing and virus-slaying radiation lanced through every molecule of now-clear water rushing through the tank.

Purified, radiated and crystal-clear, the once-polluted and contaminated waters surged out of the exit ports past banks of Cerenkov detectors that controlled the intensity of the radiation treatment and kept the residual radioactivity in the waters well below harmful dosages.

In Radiation Control, Third Officer John Baker had completed his rundown of the beam sources and was satisfied that there was no leakage. The counters danced their flickering ballet of subcritical levels. The recycled waters from Munson Station poured clean and pure into the arterial connecting Munson Station with the Supply Div pumps of Claremont Station.

The waters left Munson clear and pure yet before Fourth Officer Ascot and Third Officer Baker had completed their shifts, more than five hundred persons in Claremont Sector were dead of radiation poisoning.

First clue to the killing infusion was picked up by a furnaceman making his routine rounds in a fabrics plant in the northeast quadrant of Claremont Sector. As he turned the corner and headed for the fourbank nuclear furnaces, he heard the urgent, rising notes of the vocalarm and he spied the flashing red lights. He raced to the first unit, took one quick look at the high radiation readings on the incoming coolant waters and then slapped the master switch damping all piles. Throughout the plant more alarms sounded as machinery slowed to a stop.

Within the next half hour, Med teams had diagnosed the fatal illness from autopsies on the initial victims and had begun the frantic search for the source. They had reached the conclusion of water contamination almost at the instant that confirmation of their findings came from Industrial Control.

Three minutes later total quarantine was slapped on

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Claremont Sector and FGWA Police Div began sealing off all traffic to and from the sector. Simultaneously, the order was issued that stopped all water flow into the sector.

Radiation Control teams from San Div's research and analysis sections moved into the field as the news media cast the first hints of trouble in Claremont Sector.

In Munson Filter Control and Radiation Control, along with the Bio and Research sections, the emergency headquarters circuits overrode the console monitors of all watch officers. The face of Section Chief Halleck appeared.

"Divert and dump!" Halleck ordered. "I say again, 'divert and dump.' "

Without a moment's hestitation, Fourth Officer Gordon Ascot reached up and grabbed the ganged switchbars on the emergency panel above his console. At the mouth of the filter chambers a sealed floor section of the huge sewer main dropped open at the same instant that a knife-like door shield dropped out of a recess in the sewer main and fell across the mouth of the chamber. The filthy waters smashed against the barriers for a few seconds and then receded as the tide of sewage spilled down the now-open diversion channel. This was the emergency by-pass and with its opening, Munson Sanitation section was out of action. The contaminated wastes poured into the huge by-pass and gushed downward to a long-unused emergency channel that bored through the earth for hundreds of miles and then emerged below the surface of the Pacific far offshore.

All sections were swinging into emergency procedures. "Dump and divert" could mean anything in the way of biological, chemical or nuclear contamination of a level beyond the normal handling procedures of the station. In Bio section, the research and analysis crews leaped for safe suits, ripping off their white coveralls and dashing naked through antiseptic sprays and light radiation washes to reach the sealed suits. Two seconds after the last man sealed up, the section watch officer flooded the section with antiseptic gases.

In Radiation, the teams slammed themselves into shielded radiation gear. Third Officer Baker made a fast but complete scan of all detector readings. All levels were well below operational safety.

Baker had already sealed the exit ports of the radiation tanks so that not a drop of water was spilling beyond Munson Station. The last thousands of gallons of precious liquid were gurgling down the emergency drains inside the radiation tank, like used bath water from a tub.

Three minutes after the "divert and dump" order had been given, Munson Station San Div was on a standby emergency status and bone-dry right down to the lab samples that had been dumped, container and all from Bio section.

Halleck's face again appeared on the section watch officers' monitors.

"We have just been informed," Halleck told his junior officers, "that a major radiation sickness epidemic has been isolated in Claremont Sector and is traceable to incoming water supplies from this station.

"All watch officers will immediately begin a thorough radiation check, section-by-section and phase-by-phase. Fourth Officer Gordon Ascot is reassigned immediately upon relief from Filter Section to Radiation Section. Third Officer John Baker is designated Survey Control officer.

"Implement."

The screens went blank and the sections jumped into action. Behind Gordon, the lift tube door opened and his relief officer sprang out. Gordon shoved the log at the officer and ran for the connector passageway that linked all working sections.

Radiation was at the far end of the passageway. Gordon paused at the sealed entrance long enough to slip a shielded suit from an emergency locker beside the door. Slamming the suit seals tight, he flicked on the suit intercom and called out.

"Ascot suited and sealed at Number One Portal."

Four radiation-sealed locks away the section crew doortender touched controls to open the outer lock door. Gordon was inside in an instant and the door irised shut behind him. "Stand by for fumigation," came the intercom order. Gordon checked his suit oxygen supply.

Deadly antiseptic gas flooded the chamber and then was purged by an exhaust system. "Portal Two opening" came the command. The second lock opened and Gordon stepped through.

Caustic acid spray lashed down over his suited form, followed by a neutralizing agent. The third Portal opened and the still-dripping Sanitation officer leaped for the lock. A body rack stood in the center of the lock and Gordon stepped into it as it closed about his armored body. A second later, high-pressure streams of water slammed against him from all sides and only the armor of the suit and the bracing of the rack kept him on his feet. Still locked in the rack, Gordon watched the water rise around his form and then envelop him as it completely filled the chamber. Inside the stiff suit, he could still feel the swirl of the waters as agitators whirlpooled it around him. Then it drained away and the final lock was open. The crewman just beyond the last portal ran the final detector check over Gordon's body and then satisfied, irised the last lock and Ascot entered Radiation Control.

Baker was at the watch officer's console talking with Halleck.

". . . And we've found absolutely nothing, skipper. I've just finished a waldo check on the outside of the exit throats and all levels are far below normal. We're clean, skipper, I'll swear to it."

Topside, Information Control had taken over the video and audio circuits into Claremont Sector.

"There is no cause for alarm," the smooth, quiet voice of the InfoSpec said soothingly to the two and a half mil-

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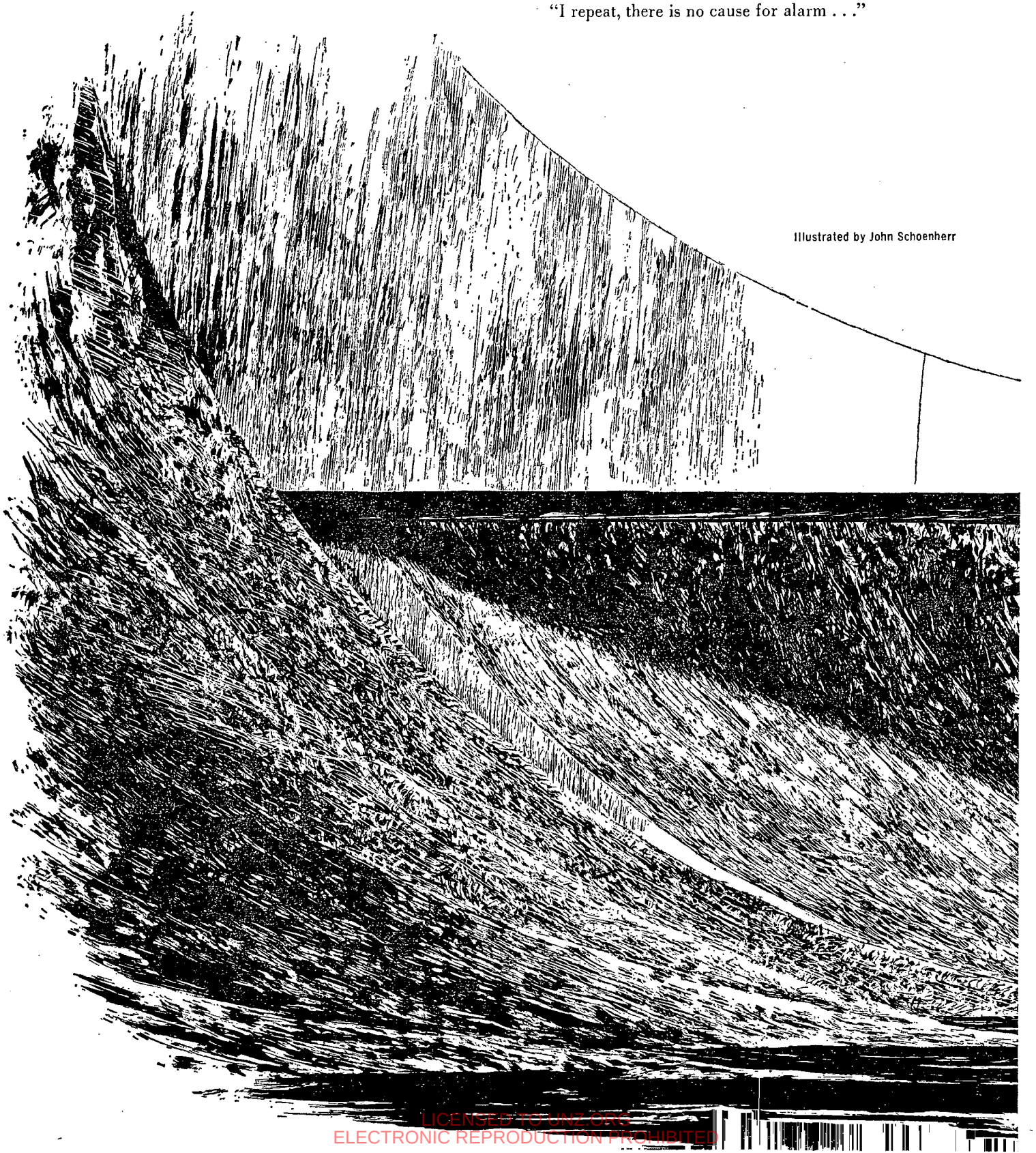
lion residents of Claremont. "Health Control has detected a minor outbreak of radiation contamination in the sector and emergency quarantine procedures are now in operation. It is anticipated that the quarantine will be lifted within three hours.

"A few cases of illness have developed but the illness is not contagious. I repeat, the illness is not contagious and there is no cause for panic. Med Control has isolated the source in the water supply of this sector and all water sources are now inoperative. Emergency water supply points are now being established throughout the sector and you will be informed within the next few minutes of the supply point nearest to your residence or place of employment. This, too, is just a temporary measure.

"Radiation Control teams are now moving throughout the sector, purging the pipe systems and normal water supply will be restored in each section as it is cleared.

"I repeat, there is no cause for alarm . . ."

Illustrated by John Schoenherr



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"They tried to force oral contraceptives on us," the shrill voice of the speaker howled above the mutterings of the mob gathered in Claremont central rec area. "They have decided that they are the rulers of the world. They tried to put the contraceptives in our drinking water supplies and we refused to allow this. But do we REALLY know if they haven't been dosing us all along?"

The gaunt figure of the man paused and stared wild-eyed over the crowd.

"How many babies have YOU had in the past ten years?" he screamed.

The crowd roared. At the edge of the square a five-vehicle patrol of FGWA Police halted silently and the officer in charge gave a low command to dismount.

"They've been trying to wipe us out through birth control," the speaker yowled, the implication now a fact, "but that isn't fast enough for them. Now they've decided to thin us out with radiation purges.

"The tyrants are using the same tactics that that arch-fiend Hitler used on the Jewish Pilgrims in 1776."

The mob thundered approval.

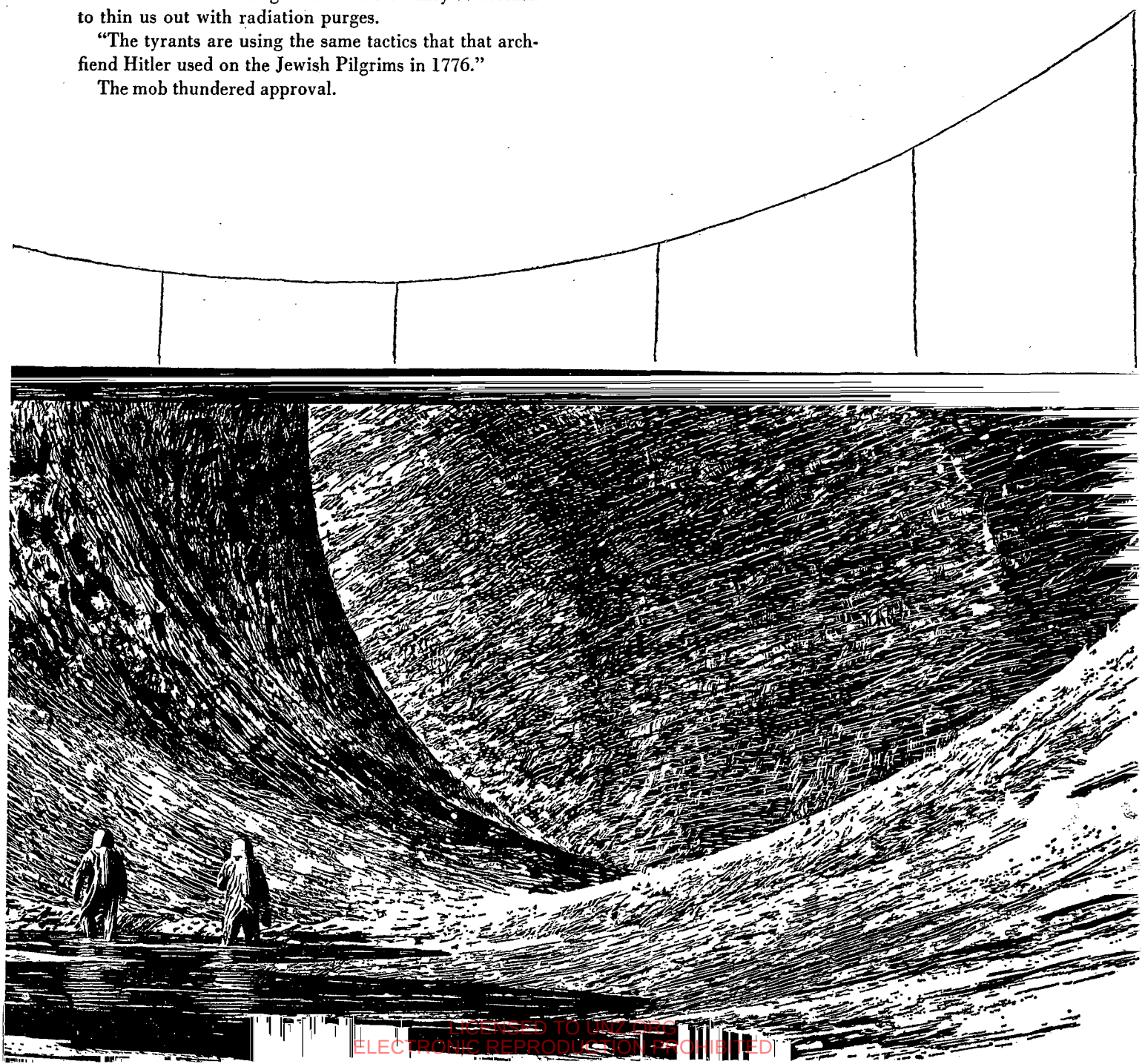
"I say the time has come to prove that we are a free people," the speaker croaked. "We have had enough of the dictatorship of the guttersnipes and the sewer rats. It was bad enough when they ruled our lives and took our money to keep themselves in luxury. But when they begin killing us to satisfy their sadism, I say that is enough.

"I say kill them!"

The mob screamed an echo "kill" and surged forward. Suddenly, the booming amplification of the police commander's voice drowned out even the turbulent anger of the horde.

"Stand where you are," his voice crackled over the open Rec area.

The crowd froze.



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A thin line of Police personnel extended across one side of the square. Each man held a riot stunner at ready with the power set on low intensity.

"I order you to disperse immediately," the police commander called out. "The words you have just heard from that man are without truth or foundation. The full truth has already been given you by Information Control and all water supplies will be restored within the next two hours—some already are back in service. Go to your homes."

"Kill them," the shrill voice of the agitator echoed from the hidden depths of the mob. The mass of humanity growled and moved towards the thin line of police.

"For the last time," the amplified voice of the commander thundered, "I order you to halt and disperse."

"There's just a few of them," the agitator screamed. "Grab and kill them, and then let's get the rest of the rats and drown them in their own holes."

A piece of broken angle steel came hurtling out of the crowd and gouged into the shoulder of one of the officers. He reeled and dropped his stunner. In an instant, the mob rushed the line.

"Fire," the commander ordered.

Fifty stunners opened up on the mob and the front ranks crumpled as the beams struck them. The howling mad horde leaped the bodies of the unconscious and kept coming.

"Intensity Three," the commander called.

The patrolmen flicked switches on their riot weapons and in an instant the Rec area was a seething mass of fear-maddened humanity trying to escape. The mob melted into a fleeing torrent of people.

"Cease fire."

"Stop," the wild-eyed orator screamed as he clutched at the men racing back past him to escape the stunner beams. "Stop you cowards. We can kill them. Kill them, you hear!"

He was ignored and shaken off by the broken mob. The police commander signaled to a pair of his officers. He pointed to the agitator.

"Arrest that man," he ordered.

As the policemen were dragging the struggling, cursing man to the vehicles, Munson Station San Div commander Ray Halleck was on a conference circuit with Regional headquarters, Claremont Station headquarters and his own Radiation section. Halleck listened as the Claremont commander reviewed the initial survey.

"There's no question about the radiation contamination, Ray," the Claremont chief said. "When the D and D order was given the pipes were full. Our teams have air-pressured the residual water from the system and believe me, Ray, it's hot. Not only that, but our flow graphs peg it positively as coming from Munson Station recycling. We're purging now and Regional is shifting Page State outflow to us once we're clean. But you'd better get to work on your Radiation section."

Listening in on the conference circuit, Third Officer John Baker began to growl. Halleck cut him off before he could speak.

"Andy, I'm so sure of my people that I'll go into that radiation tank and lap up the moisture on the bottom of the tank. If Johnny Baker says we're not leaking hot stuff, then I'll bet my life on it."

The Claremont commander looked doubtful. Regional Commander Winthrop spoke up.

"Ray, we're not questioning the integrity nor the capability of your people. If they weren't good, they wouldn't be where they are. But the plain and simple fact remains that now more than five hundred persons are dead and God only knows how many more are critically dosed from 'hot' water pumped up from your section."

"That water went through Claremont Supply pumps," Ray Halleck retorted. "Anyone check their pumps for leakage?"

The Claremont commander flushed. "That's already been done and we're clean," he snapped.

While the exchange was going on Gordon Ascot and John Baker had been conferring in quiet tones. Now Baker broke in.

"If you gentlemen will accept the fact that we're clean here and that our outflow was good at the exit portals and yet was 'hot' when it entered Claremont pumps, then there has to be just one answer."

"And . . . " Halleck queried.

"Something's leaking in between our portal and Claremont pumps," Baker replied. I now make formal request for permission to inspect the connector duct from the face of my portal to the pump intakes."

"I request permission to accompany him," Gordon broke in.

Both Regional Commander Winthrop and Section Chief Halleck hesitated. After a long moment's pause, Winthrop snapped "Permission granted."

Five minutes later, Baker and Ascot, armed with portable detectors, began a clumsy descent down an inspection port ladder into Munson's radiation tank. Their heavy, shielded radiation suits and the bulky detectors made slow going.

Baker led the way through the inner hydraulically-loaded trap door and then they were inside the vast cavern of the tank. A hundred feet in circumference, the cylinder extended for a half mile under ground. The two officers eased their way down the slippery metal rungs and finally reached the floor of the tank.

With Baker still leading, they picked their way through the knee-deep pools of residual waters that stood in the bottom of the cavern. Baker led them carefully around and through the now-closed and shielded ports of the source materials, not taking any chances on stray radiation. The counters in their hands ticked fretfully but without any show of radiation intensity. It took them ten minutes to navigate the length of the tank and then they stood at the exit ports.

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Baker waved his arm and the pickup video scanner caught the movement. Back in Munson Radiation Control, the relief officer flicked the switches to open the exit ports. The great gate shield rumbled open and Baker and Ascot moved out of the lighted brilliance of the tank into the spacelike blackness of the two-mile long connecting duct. Light from the tank streamed through into the duct and illuminated the damp walls of the huge water channel. The two men shivered involuntarily as the pipe shuddered beneath their feet with the closing of the exit portal behind them. The valve slammed into place and total darkness enveloped the two tiny figures.

As a man, they switched on suit lights in the same instant and then grinned at each other. "Scared?" Johnny asked softly over the intercom.

"Just as badly as you are," Gordon retorted with a half smile.

"Let's go."

They moved down the damp wide avenue of the duct. A hundred yards from the Munson exit port, Baker stopped and turned to Ascot.

"Let's split up and each work down a side. As big as this tube is, we should be able to work along the curvature at least twenty-five to thirty feet apart. It'll give us a better chance of pinpointing any source leak, although God knows that if it's hot enough to do the damage it has, it will be plenty hot for us."

Gordon nodded and moved away to the left of the tunnel, placing his suit-covered feet carefully along the slippery and curved surface of the tunnel floor. When he was opposite John he nodded and his suit headlamp bobbed. The two officers moved very slowly down the length of the bore.

The twin needlepoints of light edged along the sloping walls. Even through the heavy construction of the hooded radiation suits the eerie echoing thunder of their footfalls could be heard. They had progressed nearly a mile towards Claremont pumps when Baker suddenly called out.

"Hot stuff ahead."

Gordon paused and glanced again at his detector. The count was up.

"How hot?" Baker asked.

"I'm reading it here," he called back.

"Seventy-five roentgens," Gordon replied.

"I'm getting one-twenty-five," Baker said. "Whatever it is must be on this side. Let's take it easy but keep moving."

The twin lights moved down the tunnel. Now Gordon's detector was clicking faster and the count rose to one hundred fifty roentgens within a hundred feet.

"I'm up to one fifty, John," he reported.

"It's two twenty-five on this side," came the reply.

Another fifty feet and the count jumped to three hundred fifty on Baker's side and to three hundred on Ascot's.

"What'll these suits take?" Gordon asked.

"They're designed to withstand a max of two thousand roentgens for two hours," Baker said. "That's why we call 'em 'Two for Two' suits. But I don't think anyone's ever tested them to max and I don't want to be a pioneer."

The detectors were now clicking in an almost steady whir. Another fifty feet down the tunnel and Baker was reading seven hundred fifty roentgens. He stopped and played his light ahead of him and along the sides of the tunnel. The moving beam flickered across something ahead.

"Hold it, Gordy," Baker ordered. Ascot froze in position. Baker moved the lamp beam slowly back across the interior of the tunnel. It flashed again and the radiation officer held it steady on the object.

"Gordon," he breathed, "look!"

A thick, oily stream of liquid was cascading down from the roof of the duct and splashing into a pool on the floor ahead.

"Turn off your light," Baker ordered.

Both suit lights were quenched and in a couple of seconds their eyes acclimated to the darkness. The unearthly blue glow emitting from the stream of falling liquid made a pillar of weird light in the darkness and the bluish glow danced malevolently over the entire pool and stream trickling down the tunnel floor towards Claremont pumps.

"What is it?" Gordon queried.

"I don't know," John replied, "but whatever it is, it's a lot hotter than hell. I'm reading close to a thousand and I'm still nearly a hundred feet away. Come on over here, Gordy, and let's see if we can find where this is coming from."

Gordon slipped and skidded down the left wall of the tunnel and angled towards John Baker.

"Don't get too close to that stuff," the senior radiation officer cautioned, "it might splash on you and as hot as it is from here I wouldn't guarantee what these suits would do if it got on you."

Baker had turned his lamp beam upwards toward the upper limit of the descending column of liquid. Gordon reached his side and turned his lamp upwards. A hundred feet above them, something metallic gleamed in the dim light of the suit beams.

"It looks like a rod, or pole, of some sort," Ascot said.

Baker moved away a couple of feet to hit the object at a different angle with his lamp beam.

"It's a pit auger," he exclaimed. "That's what it is, a tunneling bit of some kind, jammed into a hole in the roof of the duct. Look, you can see where it's twisted back the edges of the hole and then locked. This stuff is pouring down beside the auger."

Gordon moved cautiously down the tunnel towards the fall of radioactive sludge. At as safe a distance as he dared approach without being splattered, he studied the liquid in the light of his suit lamp.

Suddenly he turned and hurried back up the tunnel.

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"Johnny," he shouted, "I think I've got it pegged. It's contaminated oil pile coolant mixed with industrial nuclear wastes. Some idiot has run a tunnel bit through an old plant waste tank and into the duct. He must have realized what he'd done when he lost the bit and got scared and never reported it. He probably never knew he'd tapped the old sump tank."

"What would a waste tank pit be doing down this far in the ground," Baker demanded.

"It probably isn't," Gorden replied. "We don't know how long that bit is or how deep the bore. It could be a hole running all the way down from topside. Or it might have been started in the sub-level of some shoestring industrial joint that was trying to tap an unauthorized water source for free water. That tank could have been just below topside or not more than a couple of hundred feet down. I'm betting it's close to topside and it's been dribbling down this bore for a couple of days."

"I'll buy that," Baker snapped. "I think you're right. Come on, let's get out of here and get in contact with the boss. We're going to have to find that tank and seal it off, then get this duct patched and decontaminated as fast as possible."

He started to move back up the tunnel towards the Munson portal. As he headed up-bore, he began counting his steps. Behind him, Gordon moved quickly towards the pool of blue fire, paused there for an instant and then turned and followed Baker up the tunnel. Twenty minutes brought them back to the closed Munson portal.

"Twenty-two hundred and ninety-six yards," Baker muttered. "That makes it just a little more than a mile and a quarter to the leak."

He flashed his lamp at the video scanner focused on the outer rim of the portal. The tunnel immediately began reverberating as the portal shield swung open. Both men blinked at the brilliant light flooding out from Munson tank. They passed through the portal and Baker paused to wave a signal to close the shield behind them. As he stopped, Gordon trudged ahead of him. The portal began to close and Baker turned back and started to follow Gordon towards the ladder a half mile further up the tank.

"Gordon," he yelled, "what's that on your legs?"

Fourth Officer Gordon Ascot continued his fast slogging march up the floor of the tank. "Radioactive gunk from back there," he replied soberly. "I thought it might help trace that tank faster if we had some idea of the material source and its half-life."

Baker broke into a clumsy run. "You crazy, dumb heroic fool," he shouted as he went past Gordon in an awkward, ridiculous gallop, "that stuff's so hot it could burn right through that suit. Hurry up."

Baker continued his lumbering run down the length of the lighted tank, waving his arms frantically and hoping that someone on the monitors would get the idea that something was wrong.

They did.

A minute later the inner trap door at the far upper end of the tank popped open and a suited figure called out over intercom.

"Trouble?"

"Decontamination chamber," Baker panted. "Gordon's soaked with hot stuff. Get a winch down fast and we'll haul him up."

The man at the top of the ladder vanished through the trap and the tank shielding cut off the sound of his suit intercom. But by the time Baker and Ascot reached the foot of the ladder, four decontamination squad men were waiting around a bosun's chair rigged to the end of a cable.

"Get in," Baker ordered. Gordon climbed into the seat.

"Get him up fast and get him out of that suit," Baker yelled. "Peel him near the door of the chamber but don't wash the suit down, we'll need the stuff for analysis. Work fast and get him out of it and out of the same room and into full decon as fast as possible. He may already have received a severe whole body dosage."

The cable was already rising with Gordon dangling from the end.

"Tell the medics to give him the biggest load of anti-rad shots they think he can take," Baker called up.

While the decontamination squad and medics were working with Gordon, Baker had spun through the decontamination sprays in his hot suit and quickly shucked it. Inside the Munson Radiation control room, he ordered the relief officer out of the watch chair and manned the console.

He quickly recounted their discovery to the conference circuit. While he was still talking, Regional Commander Winthrop had turned aside and ordered full, block-by-block maps and blueprints of the suspected territory above the Munson-Claremont connector ducts, together with profiles of the subterranean strata.

He laid off the approximate distance measured by Baker on the return trip and then inscribed a mile-wide circle. The circle cut through segments of both sectors at their boundary.

Even before he had formally issued the orders, both station commanders had been snapping instructions to their teams. Radiation field teams from both commands began converging on the mile-wide area, while additional back-up teams from Regional headquarters and neighboring sectors were ordered to move in an assist.

"We'll have to get crews into that duct immediately," the regional commander said. "Can your people handle it, Andy?" The last was to the Claremont commander.

"That stuff is flooding down towards Claremont pumps, sir," Baker broke in. "I wouldn't advise anyone entering from down-tunnel. It would be much safer and faster to go in the way we did from this end."

"Right," Winthrop replied. The Munson station commander had already ordered repair crews down. "They'll need a radiation man to take them in," the regional commander said.

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Gordon Ascot stepped up to the console. "I'll take them in, sir."

"The hell he will, commander," Baker snarled. "This idiot's already taken more of a dose than is safe."

"You're wrong, Johnny," Gordon said. "That suit was a dream. Not only was I clean but you and your big mouth have got me so loaded with anti-rad that I could sit in the middle of a pile without a suit for at least an hour."

"Both of you forget it," First Officer Ray Halleck snapped. "Neither one of you is going back in there today. I'll have a radiation officer ready when the repair teams hit the tank door."

"Be sure they have extensible platforms, skipper," Baker cautioned, "and cutting torches. They're going to have to slice off the end of that auger that's sticking down into the duct before they can slap a patch on the wall."

On topside, radiation and police teams were moving rapidly through the mile circle of suspicion. While they were still searching on a hit-and-miss basis, Research came up with an analysis of the residual hot stuff on Gordon's suit.

"It's Carpanium 463, commander," research reported to region. "It's a rare ore that used to be imported from Wolf Two until they found out it was really too hot to handle on Earth. Now it's used only in space plants. It was used in this area for the last time about thirty years ago in a pilot plant of United Dynamics, a block from the present plant site, here." The research officer stabbed a finger at a point in the southeast quadrant of the mile-circle now inscribed on all maps. "We think there's every possibility that this stuff comes from their waste tank since they were using an oil bath and coolant pool for the test pile. This stuff has fantastically long half-life but it's easily scoured by conventional decon methods."

Using the old United Dynamics plant as one point and the rip in the connector duct as a second point, a line was drawn from pipe to topside on a profile of the subterranean sector. The upper end of the line terminated on a point of a smaller circle and the only building on that circle was a small plastics factory two blocks from United Dynamics.

It took radiation teams just four minutes from the time they entered the building to find the illegal well and the false hole. It took police units one more minute to arrest the full executive staff of the plant.

Three hours later, the bore hole had been plugged, the punctured waste tank resealed and removed to a more distant and safe spot and the ruptured connector duct repaired.

At topside, order had been restored and the quarantine lifted from Claremont. Water diverted from Edgemont and Palmdale Sectors now was running through the purged distribution system and the last victims of the radiation dosages were accounted for and under treatment where possible.

"We'll be decontaminating and purging that connector for at least twenty-four hours," Section Chief Ray Halleck told Baker and Ascot. "You two can take that time off and another thirty-six on top of it. You've earned it. Oh, by the way, Gordon, you're permanently shifted to Radiation."

It was close to midnight when the two young officers, dressed in freshly-pressed blues, stepped out of the entrance of Munson Station topside headquarters. The bright lights of the city kept the lower levels bright as day.

Gordon glanced at his watch. "We can still make the last floor show at The Midway," he said with a grin. "There's a redheaded stripper there that . . ."

"Come on," Baker said laughingly, "let's go."

They left the slideway at Central Rec and headed across the square towards the flashing lights of The Midway. Despite the hour, a crowd was gathered around a shrill-voiced speaker at one corner of the square. Fragments of his harangue drifted over the city noises to the two FGWA officers.

". . . And it's time that we stopped this crass dictatorship of our lives. Why just today, they tried to wipe out half of Claremont with radiation poisoning. Luckily, we caught them at it and they covered it up with some cock and bull story. I tell you friends, it's time we put an end to this support of a bunch of slobs who live off our sweat and excretions and never turn a finger of real work in their entire lives. How much longer must we . . ."

As Third Officer John Baker and Fourth Officer Gordon Ascot hurried past the crowd, a man on the fringe of the group caught a glimpse of the blue uniforms with the scarlet bands.

"Guttersnipes," he yelled.

"It's nice to be a public servant," Gordon grinned at his companion. "It's such a rewarding occupation." ■

THE ANALYTICAL LABORATORY | AUGUST 1964

PLACE	STORY	AUTHOR	POINTS
1	Sleeping Planet (Pt. 2)	*William R. Burkett, Jr.*	1.23
2	Genus Traitor	*Mack Reynolds*	1.80
3	Inter-disciplinary Conference	*Philip R. Geffe*	2.93
4	Satisfaction	*Damon Knight*	3.27

THE EDITOR

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BILL FOR DELIVERY

CHRISTOPHER ANVIL

Super-technical, high-priority, special-purpose machines can make hellish cargo-handling problems, of course. But now, tomorrow, and forevermore, you can bet on live cargo to make any transport man's life hell!

8/14/97

Dear Sam:

I agree about keeping in touch. Old pals should stick together, especially when they're both in the space transports.

Your letter, with quotes from your diary during *Starlight's* trip with the troublemaker, reached me after apparently being forwarded over half the known universe. I promptly slipped the message spool into the viewer, but I can tell you that I slipped it in with trembling fingers, owing to what I've been living through myself. I have to admit that what you went through was pretty awful. But I'll tell you, Sam, what I'm going through is worse yet.

Just as you're first officer on *Starlight*, I'm first officer on *Whizzeroo*. You will see from that name that our company isn't quite as dignified as the one you're working for, but never mind that. It could be worse. One of our sister ships is TSM *Clunker*. The way these names come about is, the Old Man looks at the records of this or that ship, and all of a sudden he gets red in the face, bangs on the desk, and yells, "Look at this lousy record sheet! They call this the *Star of Space*, hah? Why, they haven't met a schedule in the last ten trips! *Star of Space*, my foot! From now on they're *Muddlehead!*"

And that's that. Next trip to the loading center, out comes a crew to paint out *Star of Space* and paint in *Muddlehead*.

The Old Man judges strictly by results. If you have a streak of bad luck, or even if the whole crew comes down with the green sandpox, through no fault of their own, that's still no excuse. All it wins you from the Old Man is:

"Don't give me your alibis! *Did* you keep the schedule or *didn't* you keep the schedule?"

The answer better be, "Well, yes, chief, *sure* we kept the schedule!"

"O.K. That's all I'm interested in."

You see what I mean. It makes it kind of rough if, through no fault of your own, the gravitor gives out before its triple-clad warranty period is up, or a jump-point slides out of congruity and hangs the ship up in the middle of nowhere for a month. It doesn't matter if you don't have any more control over the trouble than you have over the speed of light. The only thing that counts is, *"Did you keep the schedule?"*

I think you get the picture, Sam. This just isn't an outfit where they study the crew's brain waves after every trip, or send along psychologists, nurses, and free candy bars to keep us happy.

Now as for this trouble I'm in. I think I ought to tell you that the way the Old Man operates is kind of old-fashioned, from some points of view. Now, don't think I'm saying that it's ridiculous. A forty-five automatic is pretty old-fashioned, but when the big lead slugs start coming out, I'll tell you, there's nothing ridiculous about it. That's what you've got to bear in mind when I tell you about this.

One way the Old Man is kind of old-fashioned is the way he operates when somebody doublecrosses him. There was a third officer a while back that false-boosted a cargo of first-grade Stiger hides, jumped ship at the next loading center, and collected a neat eighty-thousand profit for the hides and the cargo-section. This bird invested thirty thousand in laying such a long crooked trail that it would cost a mint to track him down and catch him.

Now, the modern, up-to-date spacefreight executive will not let emotion cloud his reasoning, but will feed this problem to his computer, and will come up with the best answer from a strictly profit-and-loss standpoint.

And what did the Old Man do?

Well, they tell me the first thing he did was to rise up behind his desk, spin his chair over his head, and slam it into the wall thirty feet across the room.

"I'll get that crook if it kills me."

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Now, as to exactly what happened next, I don't know. I wasn't there. But the bird that stole the hides turned up ten months later orbiting a planet in a space yacht, stone dead with an iron bar wrapped around his neck.

Now, it's a very old-fashioned thing—it's "positively infantile behavior"—to go out and nail the bird that's robbed you, especially when he's laid such a crooked trail that it compounds the loss to locate him and give it to him right between the eyes.

It's old-fashioned. But I'll tell you, Sam, it really discourages the next crook that gets a bright idea.

Doublecrossing the boss is rough business in this outfit. Honest but stupid mistakes can be almost as bad. There was, for instance, a cargo-control man on one of our ships —it's named the *Moron's Delight* now—who made three blunders in a row, on the same trip.

First, he missed cold-mold spots on a cargo of hardshell beans. The mold ate into the beans, generated heat and moisture, the beans sprouted, and the cargo-section arrived at the pick-up station split wide open with green slop drifting out.

Next, he O.K.'d a pressure-plate-type elevator-section filled with a cargo of grain that had cutbug eggs in it. The eggs hatched into maggots, which, eating steadily, grew into armored slugs, and then looked around for some rock to drill into for the next step in their life-cycles. The nearest thing was the wall of the elevator-section, which, as a result, arrived at the pick-up station holed like a sieve, with the grain drifting in a giant cloud around it.

You might think this was enough disaster for anybody, but this cargo-control man was exceptional.

The next cargo was a complete self-contained automatic factory, built for an ore-rich planet with conditions too tough for human comfort. You know how these self-contained factories work. Roughly, one part has diggers, crushers, grinders, and conveyers; another section has separators and furnaces, and the chemical-treatment cen-

Illustrated by Kelly Freas

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ters where objectionable impurities are got out, and alloying elements put in; further on there's Special Processing, followed by Manufacturing, where the finished product is made. Another section houses the hydreactor, dynamos, and energy-balance equipment, while yet another has the automatic control center. Outside, there are arrangements to move slowly from place to place, as the factory eats up the ore supply.

There's one more device, that receives the signal by which the factory is controlled from a distance. If you want it to make one thing, you send one signal. If you want it to make something else, you send another signal. The exact nature of these signals is a deep, dark secret, with the control apparatus put together in sections, one contractor knowing one part of the plan, one another, and so on.

But there's a funny thing about these self-contained factories. On recent orders for checking cargo, the cargo-control man is instructed as follows:

WARNING: THIS AUTFAC–62A IS PROTECTED AGAINST SCALE BY SPECIAL CHEMICAL COATING PROCESS. DO *NOT* USE ELECTRONIC PROBE TO TEST FOR SCALE.

The "NOT" in this warning is put in in red and underlined three times.

Now, in the first place, no one can buy any chemical coating that will stop scale organisms, despite the terrific demand. Anyone with such a process could make a mint. Therefore, why keep it secret?

And in the second place, why be so desperate to keep the cargo-control man from using his electronic probes? How could they hurt a *chemical coating?*

You see what I mean. There's a screwy aspect to the warning. But there must be *some* reason for it.

Now, what do you suppose this cargo-control man did when he saw the warning.

Right.

He read it over three or four times, growled, "They're nuts," and went ahead and used probes *anyway*. I had this direct from the first officer of the *Moron's Delight* while we were in an entertainment palace on a frontier planet called Snakehell.

The *Moron's Delight*, by the way, makes the run from Snakehell *out*. Personally, this was the first time I ever knew there was anything out beyond that place. But apparently the Old Man found some excuse to open up an outbound run.

Now, as you know, these automatic factories come in different sizes. The biggest come in pieces, with teams of specialists to cluck over them all the way out.

But the particular factory entrusted to *Moron's Delight* —which was named *Recordbreaker* before this happened— was the small model. This is about a hundred feet long by eighty wide in the middle, and has roughly the look, from overhead, of an Earth-type horseshoe crab.

To protect it from damage, the factory has to be put in a cargo section, and the contract specifies a particular kind, specially shaped and padded, and made of thick high-quality alloy steel.

Any spaceman can see that this super-duper cargo-section uses a lot more steel, and everything else, than it needs. But, of course, it was the automatic-factory company's engineers who made up the specifications, and what they know about designing cargo sections could be written on the head of a pin. Still, there's no getting out of using the things, since they're specified in the contract.

Now, to get back to the cargo-control man on *Moron's Delight*. Having checked the way the factory was bedded into its gigantic flexwood rests, and having examined all the springs, pneumatic pads, layers of plastic webwork and everything else on his checklist, he duly came to the warning NOT to use his electronic probes, and used them anyway. He didn't find anything wrong, put his O.K. on the necessary papers, and the cargo section was boosted to the cut-loose point. Then the ship started back.

When the deluxe cargo section reached a certain position, it would make a subspace jump. The detectors showed that it did that, so of course it seemed that there was nothing to worry about.

The only trouble was, the cargo section went on through subspace and *never came out on the other end.*

It's not hard to guess what went wrong.

When this cargo-control man ignored the warning and used his probes on that factory, he was begging for trouble.

Obviously, the wizards who made the factory wouldn't be so illogical without *some* reason. Since they didn't want the electronic probes used near the factory, it must be that the probes would somehow interfere with it. Since the reason they gave wouldn't hold water, there must have been some *other* reason.

Now, just what part of this self-contained factory could the signals from the probe affect? Certainly they wouldn't hurt the digging or initial-processing equipment. But what if, after going through all the elaborate precautions for secrecy, it just happened to turn out that the signals from the probes could activate the supersecret remote-control unit—*by pure accident?*

Sure, they'd make changes. But until then, how to safely ship the almost-finished factories for rush orders they had on hand?

That must have been the reason for the gibberish about the new chemical coating. A cargo-control man with any kind of nose for trouble would read that warning, and you couldn't pay him to put a probe in there.

But, as you remember, this particular cargo-control man did it anyway.

Naturally, life being as it is, he activated the remote-control unit. That started up the factory.

Now, the factory was designed to mine iron ore, and, using its own special process, turn it into iron and steel goods. Well, the whole hundred-foot length of the factory was packed in an alloy steel container. The diggers,

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crushers, and grinders were designed to handle any ordinary ore, but you can see that an ore of the hardness of this alloy-steel container would pose something of a problem for the factory.

Also, the factory was designed to move under its own power to the nearest ore. But in this case the ore—the alloy steel cargo section—could be detected in all directions, completely surrounding the factory.

Apparently it took time for the factory's computers to work these problems out. So everything seemed peaceful and quiet when factory and cargo section disappeared into subspace.

But not too long after that, the factory apparently worked out the difficulties, slid out some newly-fabricated, specially-tipped drills and magnets, and settled down to business.

When time came for the cargo section to go back into normal space, there wasn't enough left to do the job. It had been eaten up by the factory.

When the alarm on this missing automatic factory came in, naturally nobody had any idea *what* had happened. But it looked like someone had worked out a way to hijack a cargo part way through subspace.

Right away, the Space Force got worried about the possibilities, and put out an All-Sectors alert.

No doubt you heard about that alert, at the time. But you remember, they called it off, and they never did explain what happened.

Naturally. They were too embarrassed.

They did find the factory, surrounded by a vast number of little metal objects of two kinds. One was a short hollow cylinder closed at one end and slightly flared at the other, about the size of a large inkwell, and with a tiny bouquet-of-roses design on one side. The other objects were little, slightly-arched disks, with a small handle on top of each one. There were literally millions of these things, each one made out of very thin cast-iron.

The Space Force, operating under an All-Sectors alert, was keyed up to the limit to begin with, and at first didn't know what to expect from all these objects. After they got over that, there was the problem of getting the factory into another cargo section, when all the factory was interested in was eating up the cargo section and turning out more millions and millions of these little disks and cylinders. One thing led to another, and since it all took place in subspace, everyone was pretty frazzled by the time they got the factory *out* again, along with some millions of its products.

Meanwhile, anyone with the leisure to stop and think was trying to figure out the function of these small cast-iron cylinders. The disks fit neatly right on top of them, but what was their purpose?

You can imagine their frame of mind when it dawned on them that this miracle of modern science had succeeded in converting an expensive alloy-steel cargo section into a host of worthless undersize cast-iron chamber pots. Worse yet, they couldn't turn the factory off, because the supersecret control-signal generator had been shipped out by a different route, using a competing carrier. And when the special factory representative did arrive, it developed that the factory, in solving the conflicting orders put into it by the accidental signals from the probes, and then in carrying out the mismatched orders by reducing high-quality steel to cast iron, had acquired a "hardnose psychosis," and become "perverse and unco-operative."

In short, the expert couldn't shut it off. Instead, the factory got hold of his control-signal generator and made fifteen or twenty little chamber pots out of it, and he was afraid to go back in there for fear it would try the same thing on him.

You can see, Sam, it was a wild life while it lasted.

Now, the upshot of this, so far as everybody working for the company was concerned, was the renaming of the ex-*Recordbreaker*, its dispatch out beyond Snakehell, the sudden disappearance of the cargo-control man, and a ten per cent cut of all pay clean across the board, including the Old Man's salary, so the company could pay off that cargo section the automatic factory ate up. There was also a big uproar about the psychotic condition the factory had got into, and threats of lawsuit, but the Old Man got it across to the manufacturer just what lousy publicity could come out of this. So everything is now settled except paying for the cargo section.

What I'm trying to get across, Sam, is just how fast you can get flattened if anything goes wrong, and also I want you to get a good clear picture of the trouble-potential of this cargo-control man who disappeared after *Recordbreaker* was renamed *Moron's Delight.* If there was ever anyone who served as a regular magnet for bad luck, he seems to be the one. Of course, he came to us with a wonderful recommendation from Interstellar Rapid Transport, but they're a competitor, if you get what I'm driving at.

Now, Sam, as for my own little difficulties. As I told you, that mess you ran into with the troublemaker was pretty rough, but it looks like a vacation compared to what I've got on my hands.

I think I've told you enough so you'll understand when I say the Old Man has a special way of reacting when anything gets him in a corner. If you think he refers to a computer for the optimum way to maximize profits and minimize losses, I haven't got the picture across. What he does is to cut rates, and speed up schedules, and grab every piece of business he can lay his hands on, practically no-questions-asked.

Ordinarily, we're a little careful about what we contract to deliver. As you know, there's always some zoo eager for a prime specimen of two-hundred-foot live *kangbar*, or some research institute that's just dying to crack the secret of those radioactive cysts that turned up after the big explosion on Cyrene IV. The job the Old Man contracted for wasn't quite as open-and-shut as these two. On the surface, it looked like a borderline case.

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You'd never touch it if you didn't need the money. But to look at it you'd think you *might* get out of it in one piece. Unfortunately, when this contract came through, our ship—*Whizzeroo*—happened to be between jobs and in a good spot to take it on.

The first I knew of this, "Hook" Fuller, second officer of *Whizzeroo*, walked in and shoved a sheet of message paper under my nose. I looked at it and read:

AM TAKING ORDER FOR DELIVERY FIFTY LIVE BANJO-BIRDS TO HUMAN RESOURCES RESEARCH CENTER ON ULTIMA STP DETAILS FOLLOW STP I AM COUNTING ON WHIZZEROO STP DON'T LET ME DOWN

The Old Man's name was right there at the end of it.

"Fifty live banjo-birds," I said. "What's a banjo-bird?"

Hook may not be grammatical, but he knows his job, and he's tough enough to last in this business.

"Damn if I know," he said, scowling. "But it don't sound so good to me. I been trying to talk the captain into shorting out the gravitors and begging out of it, but the captain's afraid the Old Man might find out."

Pete Snyder, the third officer, spoke up hopefully.

"Maybe we could break off the end of the locking hook. It's already worn down pretty bad. Then they'd have to send us back for a refit and *Spitoon* would get the job."

"That's no good," said Hook, "because this Human Resources outfit is sending their own special cargo section, and it don't hook on. You tow it with cables and spacer bars."

For the next half hour, Hook, Pete, and I sweat over the problem of getting out of this assignment. But we just couldnt' find any way out, and in due time we ended up off a pioneer planet that the atlas called "Rastor III" and that the pioneers called "Poverty." The special cargo section was already there, and we seemed to be stuck with the job.

As a last resort, Hook, the captain, and I put it to Barton, our cargo-control man.

"Listen," said the captain, "I'm not eager for this job. There's half-a-dozen subspace jumps between here and cut-loose, and one of these jumps winds us up on some new route out beyond Snakehell. We're taking these jumps with a spar-and-cable outfit, we've got to play nursemaid to fifty good-sized birds for the whole trip, and it isn't enough that we certify them now at the start, but they've got to be certified all over again before every jump. We can't just walk down the corridor to take care of them, either, because the cargo section doesn't hook in close. It's just cabled up. Worse yet, the spars are so long the corridor extension won't reach. There's no way to get from the ship to the cargo section without suiting up. Frankly, Barton, this job stinks. Can't you find *something* wrong with the cargo section?"

"Sir," said Barton, "I've turned myself inside out hunting for something wrong with that cargo section. That's the best set-up cargo section I've seen in some years."

"How about scale?"

"No scale in it, and this trip it wouldn't be critical anyway."

"Why not?"

"It's the birds we want to get back. Scale won't hurt the birds. Besides, there's no scale there."

"What about all that freak equipment to keep the birds unconscious? Any flaws in that?"

"Not that I can find. All that stuff is warranted anyway."

"That won't keep it from failing."

"No, but it means we can collect if it does fail. Besides, I can't find anything wrong with it. There's only one thing I can think of."

"What's that?"

"If the cargo section's jump equipment is out of phase with ours, we could refuse to use it."

"No soap. We already checked that."

"Then we're stuck with the job."

Hook and I argued with him, the captain threw his weight behind us, but Barton wouldn't budge.

The next thing we knew, we were ferrying up banjo-birds and loading them into the cargo section, where each bird was supposed to get strapped into his own individual couch, and have an anesthetic tube clapped over his nostrils. This is easy to say, but when you consider that each of these birds stands about three-feet eight-inches high, weighs around sixty pounds, has a set of short powerful wings armed with hooks, has spurs ten inches long on the back of each leg—not to mention the claws—you will see that we had quite a lot of fun getting these things to lie down and breathe the anesthetic. And I haven't even mentioned the best part of this bird yet. That is the bill. You would expect birds built on these lines to have short curved heavy beaks. But not these things. They have a straight slender bill around two feet long, and as sharp on the end as a needle. Since the male birds use the bill like a rapier, it's quite an experience to handle one of them. I almost forgot to mention the male birds' yellow down—if that's what to call it—which is made of innumerable tiny barbs which dig in, break off, work into your skin, and fester.

Thanks to the colonists, who had each bird tied up in a leather bag with its feet strapped together, head sticking out, and a strap on its beak, we were able to load the things into the tender and get them up and into the cargo section. Unfortunately, there was no way to get them strapped onto their individual couches without taking them out of the leather bags. Once we did that, their wings were free. Then the fun started.

I know, you can say, "Why didn't we anesthetize them first?" Well, the anesthetic was intended to keep them under, in a kind of light doze, for the better part of the trip. It was mild, slow-acting stuff, and didn't work unless you could keep the birds' nostrils up tight against the hose for about five minutes. But you had to strap them in to

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keep their heads still, and to do that, you first had to get them out of the bags. That freed their wings.

Now, the first thing a bird did when his wings were free was to use them to rip the strap off his beak. Now he could stab in a three-hundred-and-sixty-degree arc with that beak.

When he stabs a something with it, he puts all his force directly behind the point. The bill will then go through a regulation spacesuit, through a man's thigh inside the spacesuit, and stick out the other side, as we discovered from experience.

The only restraint on the bird was the knotted thong holding his legs together. He wasn't strong enough to break the thong, and his bill wasn't made for ripping and tearing. All the same, he was able to hop around after a fashion, and under the light artificial gravity this was bad enough.

Well, you can guess what happened. One thing led to another, and several of the men, jumping back to get out of the way, lost their grip on the leather bags and let more birds loose.

Pretty fast we found out that the birds fight with the bills, not with just us, but each other. The males start up a kind of fencing match, strutting and thrusting, and the females give a *chirr* noise, and sneak kicks at any other females in reach.

Of course, we had this contract, so we had to keep the birds from killing each other. But we had a little handicap we'd never dreamed of.

What seems to set the males off is the yellow down or feathers of the other males. The females, we discovered, have a duller, sand-colored down. Unfortunately, our spacesuits, for visibility, are bright yellow. We had put on our spacesuits to make it safer handling these birds. It didn't work.

As I can think of no words to do justice to the scene in that cargo section, Sam, I'll just have to say that the birds had everything their own way for the first half hour or so.

Then one of us stopped running, jumping, and parrying beak-thrusts long enough to realize that that habit of stabbing at anything yellow could come in handy.

The end of the next hour found us looking down on a good dozen of these birds with their bills stuck fast in a yellow-painted two-by-four that we found amongst the dunnage. They were pretty subdued birds, I'll tell you. But now it occurred to us that the birds *still* weren't where we had to put them. And first we had to somehow get their beaks *out* of the two-by-four.

This turned out to be a long, delicate process of tapping the two-by-four with hammers, and once we had it done, we couldn't get anywhere till we painted the spacesuits the exact sand color of the females' down. This put the male birds in a pleasant enough humor so we could strap them down. But handling the female birds, we had to either paint the suits yellow again, or else get kicked senseless at the first opportunity. The female birds don't seem to use their beaks to fight with but they have big clublike spurs, and they don't hesitate to use them.

By the time we got everything done, we were a sorry-looking crew, covered with stab-wounds, bruises, sweat, brown and yellow paint, and raised red splotches where the downy hooks had sunk in.

Our medic was afraid the stab wounds might get infected, and since his method of insuring against that was to thrust an iodine swab in to the full depth of the stab, you can see that our misery wasn't over when the birds got through.

I have felt almost that bad at the end of some trips, Sam, but never before at the *beginning*.

"Well," said the captain, flat on his back in a pool of sweat, with the medic just putting his equipment back in his carrying case, "that takes care of 'A.' I'll tell you boys, if 'B,C,D,' and 'E' in this job are like 'A' was, I'll turn in my commission and retire."

We took that, of course, for just so much blowing off steam, but he had a point all right.

Hook gingerly felt a purplish bruise at the calf of his leg. "I think we're over the hump. After all, we've got 'em tied down now."

"I *hate* live cargo," growled the captain, as if he didn't hear. "I particularly hate working for a zoo, a museum, or a research center."

"Why so?" I asked, and he pointed to a copy of the contract lying atop his locker.

"Hand that thing down and I'll show you. I didn't want to show you till we got past this point."

He opened up the contract, searched through it, and read aloud:

"The aforesaid authorized carrier does hereby warrant and agree, in addition, to release from confinement and individually feed and exercise, once each standard Terran forty-eight-hour period, each and every one of the aforesaid units of live cargo, as defined above. The feed and exercise period will be not *less* than forty standard Terran minutes, and not *more* than eighty standard Terran minutes."

Hook clapped his hand to his head, and I sagged against the bulkhead.

"There're fifty of them," said the captain. "If we exercise each of them every forty-eight hours, and do it for forty minutes apiece, that means we're going to be working at it all the time, since it's going to take time to wake them up, and it's going to take time to strap them in afterwards."

"Why," said Hook, looking dizzy, "can't we just forget that part of the contract?"

"Because," growled the captain, "then the birds will die, the contract will fall through, and the Old Man will flatten us."

Well, there was nothing to do but go ahead with it, but before this trip was half up I, for one, found myself wondering which was worse, the Old Man, or the birds.

For one thing, there were just too many of them. It

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took about a one-hour minimum from start to finish to unstrap, wake-up, feed, exercise, and reanesthetize, each one of these birds. If there had been fifteen or twenty of them, maybe one or two men could have handled the job, but there were fifty. Then, this one-hour period assumes that nothing went wrong. That was the exception. Nine times out of ten the bird took a crack at a sleeping bird, or it rammed its beak into the man taking care of it, or it bounded up and slugged either him or some bird lying on its back, with both feet.

It wasn't long before we were all either laid up, or else just getting over it. If the birds had gotten weaker or more tractable as time went on, maybe we could have stood it. Instead, contrary to what anyone would think, they just got more cranky and hard to manage. They were wearing us out a lot faster than we were wearing them out.

And, because of the stringent penalties in the contract, we mustn't let any one of the precious beasts be seriously injured.

The reason for the whole trip, according to the captain's information, was that the colonists on the planet, who naturally tried every kind of food they could lay their hands on, had found that the liver of this bird, eaten cooked or raw, created a tremendous sense of well-being, backed up by every outward evidence of health. After about a week, this faded out, leaving whoever had eaten it very sleepy. Aside from the need for twelve to fourteen hours sleep for the next two or three nights, no harmful side-effects resulted; and the treatment could be repeated, again with no visible harm from it. The Human Resources Research Center naturally wanted to find out about this. The obvious way to go about it would have been to cut out and freeze the livers of the birds, and ship *them* for analysis. But the scientists at the Research Center on Ultima had apparently discovered it was easier to get a great big grant for a great big project than to get a little modest grant for a little modest project, so they were going at it in a big way.

That was great for them, but it was ruining us.

Along in the fifth leg, when we were ready to make our next-to-last subspace jump, and Barton, the cargo-control man, had just finished his check, a male bird that was being exercised went past Barton, and spotted the yellow underside of the flap of the open pocket that Barton kept his notebook in. The bird whipped his needle-sharp bill around and rammed it through the flap.

The bill passed through the upper part of Barton's abdomen on the left side, angled slightly upward and came out the back on the right side. Barton collapsed.

The crewman exercising the bird wanted to wring its neck, but no, of course, he couldn't do that, or he'd bring a huge penalty down on our heads.

The medic said there was nothing he could do except ease Barton's pain. The only way to save him was to get him to a hospital. We called a nearby colony planet, and learned that it was an idyllic place to live, but it had no hospital. A Space Force dreadnaught answered our emergency call, and said they had facilities to handle the case. An intent Medical Corps colonel made an examination, and said Barton would recover, but would need plenty of rest and special treatment. The last we saw of Barton was his smiling face above the sheet on a stretcher as he was carried out through the air lock.

Naturally, we were thankful for Barton's sake. But this left us with no cargo-control man.

And under the terms of the contract, a duly-accredited cargo-control man had to check the cargo and certify it before each and every subspace jump, or a massive penalty would be levied, wiping out the profit of the trip.

This seemed bad enough, but this was just the start. Next, the captain announced that he had completed his thirty years' service three days ago, and, taking advantage of the retiring captain's privilege, he directed me to set him down, with a list of stores, on that idyllic colony planet we'd turned to for help. We tried every argument we could think of to get him to change his mind, but he said, "No, boys, I'm retiring as captain of the *Whizzeroo*. Damned if I intend to stay on, and then retire as captain of the *Flying Junkheap, Pack of Boobs*, or *Cretinous Jackass*."

Well, we could see his point all right, and after arguing till we were blue in the face, we finally had no choice but to let him go.

This, of course, made me acting captain, Hook acting first-officer, and so on. But this was the kind of ship—like one on a collision course with a sun—where a raise in rank didn't bring quite the zestful feeling that it ought to.

Since Barton had checked the cargo and certified it, we could now make exactly one more jump. We had to make two to fulfill the contract.

Hook said earnestly, "I wish *I* had thirty years' service behind me."

I nodded glumly. "I know what you mean."

"What do we do now?"

"The only thing I can think of is to send a priority emergency message asking the Old Man for help."

Hook snorted. "What can *he* do? Besides blame us for the whole mess?"

"Cargo-control men retire just like anyone else. But their certificates are still good. If the Old Man can pull enough strings, he may be able to get the Colonization Council, or maybe the Colonists' Protective Association, to run through their recorded files on nearby planets, for a retired cargo-control man."

With no real hope, we settled down to wait for a reply, and kept busy feeding and exercising the birds. The birds kept getting shorter-tempered and nastier and since we had gotten fairly skillful at warding off kicks and stabs from them, they now developed the habit of hitting us with the undersides of their wings. This doesn't sound bad, but the wings are about the only part of these birds that have actual feathers. And along the outer edge of the underside of the wings are several rows of quills that

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didn't develop into feathers, but end in barbed points. These aren't the hooks I mentioned earlier; these are in addition to the hooks.

By this time, we were all wearing some kind of armor under our spacesuits, and were worrying for fear the birds might break their bills on the armor and thus become "imperfect specimens" which would incur another of the contract's penalties. Added to all our other worries, this business with the wings almost brought us to the breaking point.

Now, however, to our astonishment, we got the following message from the Old Man:

CARGO CONTROL MAN RECENTLY RETIRED LOCATED ON HELL STP THAT IS COLONISTS NAME FOR THE PLANET STP YOU WILL FIND IT IN THE ATLAS UNDER CASADILLA II STP NO DETOUR NECESSARY AS THIS IS JUST BEYOND YOUR NEXT-TO-LAST JUMP STP GET THERE FAST AND OFFER BONUS KIDNAP HIM OR DO WHATEVER YOU HAVE TO STP ANY COLONIST SHOULD BE HAPPY TO GET OFF A PLANET WITH THE CLIMATE THAT ONE HAS STP COLONIST REPORTED TO HAVE SETTLED IN PLANETS ONLY CITY WHICH HAS FIVE HUNDRED INHABITANTS PLUS A SPACE COMMAND COMBAT-TRAINING HQ STP NAME OF CITY IS SALT SWEAT STP CARGO MANS NAME IS JONES STP GO GET HIM AND DONT WASTE ANY MORE TIME

We read this over several times, then headed for the planet. The subspace jump was smooth, and we had no trouble of any kind. The Space Force center on the planet co-operated with us, located Jones, Jones was eager to get off the planet, and agreed to end his retirement at once and ship with us at standard wages.

We were dizzy with our good luck, but somewhere a warning bell was going off. It couldn't be *this* easy.

When this cargo-control man came on board, with hangdog expression and unwilling to look us in the eyes, we had our first nasty suspicion. The fellow had a kind of sloppy quickness, as if he drifted into trouble through lack of method, then tried to get out by snap decisions. He'd answer without thinking, and several times shot out lightning replies without waiting for the whole question. I guess this was supposed to show brilliance, but since he didn't guess the right questions, the effect sort of fell flat.

When we'd got him out of the control room, Hook looked through his record folder and swore.

"This is the same bird that did it to *Moron's Delight*. After that, the Old Man gave him highest recommendations, and he transferred to Comet Spacelanes."

Pete Snyder straightened up.

"I wondered what hit them! Remember that double wreck and explosion?"

"Yeah," said Hook.

"Then what?" I said nervously.

"Well, they juggled him around from ship to ship, and then they gave him highest recommendations and he hired out to Outbeyond Nonscheduled Freight. He lasted one trip with them and it says here that he voluntarily chose to retire when the ship reached Casadilla II."

"*'Voluntarily chose to retire'?*"

"That's what it says here."

I'd never heard that one before. I said, "Funny the Old Man didn't do that to him."

"The Old Man had it in for Comet. This fellow damned near wrecked Comet."

"And now," I said, "we've got him."

"Yeah. *We've got him.*"

Like I said at the beginning of this letter, Sam, that mess you had with the troublemaker was rough, but this mess is worse yet.

As I see it, I've got exactly four choices:

1) Watch this cargo-control man day and night, and go the rest of the trip on schedule. But when you've got somebody like this aboard, things go wrong that you never dreamed of.

2) Dump him back on Casadilla II before he has time to wreck anything, and go ahead with no cargo-control man. This will cost us a huge penalty, and the Old Man will tear us to shreds.

3) Break my own contract, forfeit pay for this trip, and settle on Casadilla II. What this involves is pretty clear from the name the colonists have given the planet.

4) Turn pirate.

I don't know what you would do, Sam, but after careful thought I've decided to put this fellow under heavy guard, lock him up till we're ready to make the next jump, bring him out just long enough to let him make his inspection and put his signature on the certificate, and then lock him up again. It doesn't seem like he ought to be able to do too much damage, that way.

After this last jump, we cut the cargo section loose and another line will pick it up and take it the rest of the way to Ultima. We'll be coming back this way, so when we get back here, we'll let our friend "voluntarily choose to retire" all over again, and then we'll head back for a refit. We need a refit.

Now, Sam, here's what I'm going to do. I'm going to leave this letter here, with instructions to hold it unless something happens to *Whizzeroo*, or unless we just disappear and don't show up for a long time. If that happens, they're to forward it to you.

But if we get back all right, I'll go right on from here and let you know just what happened. So you'll know from whether there's any more to this letter whether we got through in one piece, or another one of those fantastic accidents hit us.

I don't think this cargo-control man ought to be able to hurt us too much, if we watch him day and night.

But you never know.

Like I say Sam, this here is a real mess.

As ever,
Al

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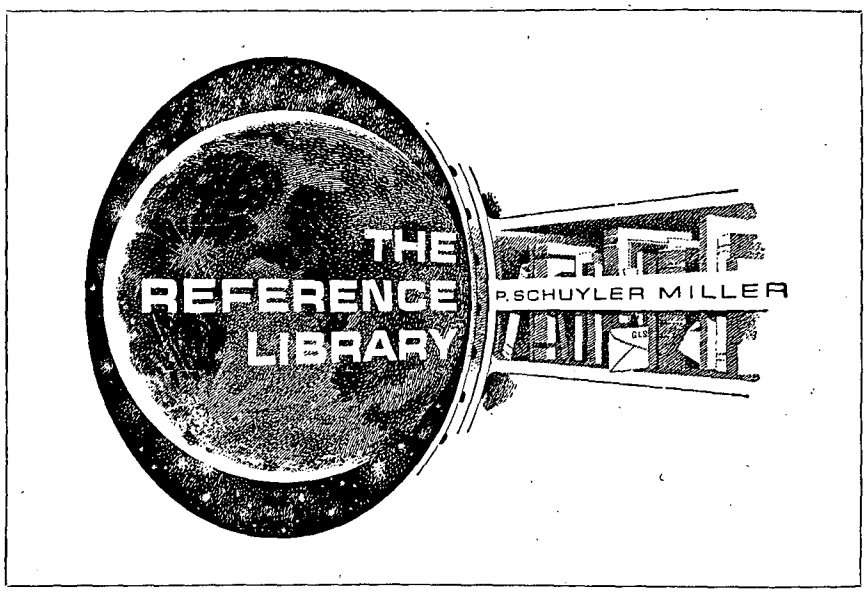

NOWHERE TO GO?

No matter what the results of the coming election may be, the wave of conservatism that we have seen building up to a breaker may put an end to any effort to send a man to the Moon—let alone Mars—in our time. "Exobiology" may drift back into the textbooks and science fiction. The problem is simply that we have known for a long time that there is nowhere in our solar system where men can live outside of a sealed can.

The nitrogen oxides school to the contrary, there is probably life on Mars and there may be life elsewhere, but it isn't the kind of life to which we have accustomed ourselves. It isn't Barsoom, or even Ray Bradbury's Mars, and I have strong doubts that the people who have been there in flying saucers are speaking in anything but parables. This certainly reduces the man-on-Mars program to an academic problem for scientists—and who wants to waste money on scientists? Not—in many cases—other scientists.

But does this mean there is nowhere for Man to go? That we are here on Earth until we destroy it or ourselves, or fester away like the trilobite and diplodocus?

For a pretty hard-nosed analysis of this question, I commend to you two recent books. In a sense, they are the same book—the report of a study made for the United States Air Force by the RAND Corporation. The detailed report, with supporting data, tables and technical detail, has been published by the Blaisdell Publishing Co. as "Habitable Planets for Man," by Stephen H. Dole (160 pp.; $5.75). A popularized version, covering the same ground and offering the same conclusions in simpler language and without any of the evidence on which the conclusions are based, has come from Random House as "Planets for Man" by Dole and Isaac Asimov (242 pp.; $4.95). With all due respect to the Good Doctor, spend the eighty cents and extra sales tax if any, and get the Blaisdell edition—"uncut and unexpurgated," as the paperbacks say. You'll want the facts and figures as well as the conclusions.

Dole, who heads the human engineering group at RAND, has taken as his definition of a "habitable" planet pretty much the stereotype of the romantic school of science fiction writers: a world where you can climb out of your spaceship and live as comfortably and happily as if you had stepped out of a jet in California or New York or Paris. Step by step, he then works out the characteristics of stars and planets which will produce this kind of salubrious climate. Finally he estimates the probability of finding such a world within a hundred light-years from the Sun.

His conclusion: there should be fifty—ten within a radius of 58.5 light-years; just one within a radius of 27.2 light-years. It is most likely to be in orbit around Alpha Centauri A or B, 70 Ophiuchi A, Eta Cassiopeiae A, Delta Pavonis, or 82 Eridani—in order of increasing distance. Yes, Virginia . . . the first starship *will* go to Alpha Centauri.

I've called the study hard-nosed. I think that in one respect it is too conservative. Along with tight requisites for the mass of the planet, its period of rotation, axial inclination, orbital eccentricity, mass and age of its sun, is the stipulation that at least ten per cent of the planet's surface must have a "proper" climate—which Rand calls one in which the highest mean daily temperature is less than 104°F—there goes New York in August—and the lowest higher than 14°F. Now, according to Victor E. Shelford's "The Ecology of North America," the normal mean temperature in January is 14°F along a line which roughly follows the southern side of Lake Superior, cuts across the Ontario Peninsula, and then follows the U.S.-Canadian boundary. In other words, much of Canada and sizable chunks of the northern United States aren't habitable by these criteria—Minneapolis, 12°F normal for January; Bismarck, North Dakota, 9°F; Duluth, Minnesota, 9°; Fairbanks, Alaska, —11°F.

Other criteria used for the study may be similarly ultraconservative. I'm no judge—but I have spent many a day at twenty-below-zero in upstate New York, and enjoyed it as long as the wind wasn't blowing. Point is, on this one count, the chances for another habitable planet within reach of a starship from Earth are far, far bet-

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ter than the RAND study shows. Perhaps John Campbell can persuade Messrs. Dole and Asimov, or either, to sum up the arguments in an article for Analog.

For the other extreme—the optimistic—in an extremely thorough, well documented book by a well-known English amateur astronomer, I recommend V. A. Firsoff's "Life Beyond the Earth" (Basic Books, New York; 320 pp.; $7.50). I'll try to give it more adequate attention elsewhere.

LIFE BEYOND THE EARTH

By V. A. Firsoff • Basic Books, Inc., New York • 1964 • 320 pp. • Ill. • $7.50

V. A. Firsoff is the British non-professional astronomer whose many books on astronomy are both readable and authoritative. I've reported on several of them here. He is a maverick in many respects, as parts of this book demonstrate. He is also a thorough scholar in the English tradition, and every statement is documented.

This is an optimist's prognosis for finding life in the Solar System and the Universe. Firsoff turns out to be a vitalist—he suggests that there is a "mind stuff" and that it may somehow be involved in the properties of the many, many subatomic particles—and consequently subscribes to the good science-fictional doctrine that life and mind need not be limited to carbon-polymer organisms. The first half of his book is an extremely thorough study of current ideas on what life is, how it originates, and other chemical processes that it may encompass.

Since he is not hampering himself with the too-conservative criteria of the recent RAND study, S. H. Dole's "Habitable Planets for Man"—see the introduction to this "Reference Library"—Firsoff not only accepts vegetation—and possibly higher life—for Mars, but rejects "Mariner" and other data that suggest Venus is too hot for life, and offers arguments for habitable regions below the surface of the Moon and in the atmosphere and on the satellites of Jupiter and the other gas-planets.

As he expands his survey into the galaxy and the universe as a whole. Firsoff wanders off into an attack on the concept of an expanding universe and apparently rejects the keystone of relativity: the principle that the velocity of light in a vacuum must be the same to all observers.

Unless you are upset by unorthodoxy, and if you need something to counteract the fascinating conservatism of the RAND study, I thoroughly recommend this book. Poul Anderson did a magnificent job with his "Is There Life on Other Worlds?", but he is a writer. Firsoff is a scientist, and it shows.

THE WANDERER

By Fritz Leiber • Ballantine Books, New York • No. U-6010 • 1964 • 318 pp. • 75¢

Now that Ballantine has slugged its way through the entire Tarzan series—a phenomenon I may yet be driven to talk about if I want to retain membership in the Burroughs Bibliophiles and get a chance to read all twenty-five books—it is back in the science-fiction business. To celebrate the event, it has published a thoroughly uncharacteristic novel by Fritz Leiber which combines elements of the Balmer-Wylie ". . . . World Collide" books, the best British cataclysmic yarns, the "Grand Hotel" approach, and just about everything *except* the fantasy-adventure genre with which he has become identified.

An altogether peculiar traveling world, the "Wanderer" of the title, pops out of an orthodox hyperspatial tube just to loo'ard of the Moon. Its gravitational attraction—and other forces—promptly rips that satellite to bits and sets Earth's innards to churning. There are earthquakes. There are colossal and erratic tides. There are conflagrations, tempests, pillage and rape and murder and traffic jams. There are portents in the heavens, and flying saucers. There is even, in the end, interplanetary war.

These events are experienced by various groups of people, from three hopped-up teen-agers on a Harlem roof to a lone man dying in the desert. We, as readers, drift from one lot to another. We spend most of our time with a scientist, a spaceman's girl, her cat, and an assortment of flying saucer disciples: this is basically their story, with their experiences illuminated and counterpointed by what is happening to the others, the world around and on the Moon. Eventually, with two of these people, we meet a fascinating extraterrestrial, visit the Wanderer—a much stranger place than you might imagine—and watch the war of the roving worlds at terribly close quarters.

This is a book you shouldn't read in snatches: you need to stay with it, to get the feel of what is happening, which counts for more than the plot. I have a hunch it's not going to be very popular at first, but that it will be remembered and eventually be awarded "classic" status by a generation who haven't read it.

MARTIAN TIME-SLIP

By Philip K. Dick • Ballantine Books, New York • No. U-2191 • 1946 • 220 pp. • 50¢

You may have read a condensed serial version of this in *Worlds of Tomorrow*, where it was called "All We Marsmen." But you should also know by now that Philip K. Dick is not a writer to condense; half the fun of reading him is the detail he slathers on over the bare boards of his plots.

The detail in this case is extremely confusing, for it includes glimpses inside the minds of a series of schizoids whose time sense has gone sadly adrift. Indeed, we are warned that this mental disruption is becoming endemic in human society—presumably as a form of retreat from the unbearable pressures of overpopulated Earth. It breaks out again on Mars, where the pressures build up differently but sooner.

The Martian society depicted is deceptively simple, as are most frontier societies. The most thoroughly developed are the community of the all-powerful Water Workers' union, headed by the invincible Arnie Kott, and the far more sophisticated New Israel with its Camp Ben-Gurion for aberrant children. Texas has a colony,

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so has California, and so has Russia, but we see little of them. We do visit a suburbia which has found itself on the fringe of the desert, and where repairman Joe Bohlen leads a dissatisfied life next door to the doomed black-marketeer, Norbert Steiner. We get glimpses of the Bleekmen, the native Martians who have adjusted themselves to a level of life like that of the Australian aborigines or the South African Bushmen.

As is to be expected in a Dick novel, all these disparate elements are intimately woven together in a complex pattern. If it is not as beautifully developed as the Nipponized American society of *"The Man in the High Castle,"* what is? Unfortunately, the true nature of young Manfred Steiner's distorted time sense, its relationship to the weird visions Joe Bohlen sees, and the reason the Bleekmen can stabilize it, are implied but never really clear. It may be that the author is saying, lest subtly than "Last Year at Marienbad," that reality is what the thinker believes it to be and what he can convince others it is . . . or it may be that he is hinting at a structure of time and place that we only occasionally sense, that breaks through in the schizoid condition, and that will one day burst on us all.

THE TOWERS OF TORON
By Samuel R. Delaney

THE LUNAR EYE
By Robert Moore Williams • Ace Books, New York • No. F-261 • 1964 • 140 + 115 pp. • 40¢

The middle sections of trilogies have a way of letting down. I think it's generic: the first book has established the situations, introduced the characters, and developed the problems to be solved. The final volume will carry the suspense to its peak, solve the problems, and resolve the relationships of the people. The middle book just keeps things going until it's time for Volume Three.

"The Towers of Toron" is the middle section of a chronicle, begun with "Captives of the Flame," in which the people of a fragmented Earth of the far future are rediscovering each other. Fifteen hundred years or more before the time of the story, nuclear warfare—the Great Fire of legend—has destroyed some quarters of the civilized world and isolated others behind radioactive barriers, along whose fringes mutation and isolation have produced strange variants of median humanity. One of these pocket empires is Toromon, whose groping attempts to rediscover and take command of the rest of the world are the setting of Delaney's stories.

The plot—and it is beautifully intricate and gloriously mystifying—deals primarily with the maneuvering of various elements of the Toromon "establishment" to control this process. But behind that, as in Dr. E. E. Smith's "Lensman" series, loom the obscure maneuverings of two galactic or cosmic forces, the possibly friendly Triple Being and the hostile Lord of the Flames. In his episode, one horrible piece of reality suddenly becomes clear. What the revelation will do is the secret of the third volume, as yet unpublished—but I trust not unwritten.

Samuel Delaney is bringing new and vigorous life to an allegedly worn-out sector of science fiction. Long may he write!

Unfortunately, the flip half of the Ace Double is not in the same league. It's a tired variant on the old one in which Space People, with a base on the Moon, decide that we are Not Ready to be Admitted to the Civilization of the galaxy. It is also the one in which one of them, planted as a subconscious spy on Earth, does not recognize his True and Noble Heritage and identifies himself with us nobodies.

ESCAPE TO EARTH
Edited By Ivan Howard • Belmont Books, New York • No. L92-571 • 1963 • 173 pp. • 50¢

Mr. Howard continues his fruitful plumbing of the back files of the Columbia Publications magazines with this set of six novelettes. They're not pretentious, and not especially memorable, but they'll pass the time nicely.

In the title story by Manly Banister we have the familiar one about the alien marooned on Earth until he can build an escape. It moves right along, told by the ex-fiance of the alien's wife. Robert Sheckley's "We Are Alone" is an interesting variant on the one in which explorers try to interpret alien behavior. Raymond F. Jones, with "Doomsday's Color Press," has the best story in the book—and the grimmest. It suggests the possibilities of a psychology which can control human behavior.

Teamed with James MacCreigh, Judith Merril, in " Big Man With the Girls," offers a slight, gimmicky little story about a concealed invader. It ought to sell to TV or the movies, if it hasn't. M. C. Pease, with "Temple of Despair," gives us a strange little spy story, and Noel Loomis ends the collection with a comedy of legal paradoxes, " 'If the Court Pleases' ", in which a young lawyer tries to cope with the tangle of precedent and contradiction when a future corporation carries a lawsuit to a court in our time.

This is the best of these Belmont rediscoveries.

WAY OUT
Edited By Ivan Howard • Belmont Books, New York • No. L92-575 • 1963 • 173 pp. • 50¢

The seven stories in this collection are from magazines published by Columbia Publications in 1951-1953. No further credit is given, and I haven't had the time or facilities to track them all down. *Science Fiction Review* didn't do my job for me either, this time. Belmont's usual claim, "never before published," can be discounted —also as usual.

The bluff certainly isn't necessary: these are very readable stories, including one of Poul Anderson's fast-moving exploits of Secret Agent Dominic Flandry among the worlds of Space, "Honorable Enemies." The enemy this time is that redoubtable wretch, Aycharaych of Chereion. H. B. Fyfe, in "Knowledge Is Power," develops a

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comment I heard long ago from a historian and political analyst who was asked whether postwar Japan would be "for" the United States or Russia. "Japan," he said, "will be for Japan."

Milton Lesser opens with "Ennui," a minor excursion into philosophy that many another writer has made before and since. Algis Budrys, in "Snail's Pace", comments fictionally on the isolation of professionals and William C. Bailey, in "X for Expendable," anticipated—in a lively but minor way—the theme of the recent best-selling "Spy Who Came in from the Cold." Alfred Coppel's "Blood Lands" is another of the efforts to invent a new kind of life on a new kind of planet, and quite an effective one, and Dave Dryfoos' "Blunder Enlightening" is a nice little yarn about an anthropologist trying to resolve the contradictions of a native culture.

GREAT SCIENCE FICTION STORIES

Edited By Cordelia Titcomb Smith • Dell Publishing Co., New York • No. 3160 • 1964 • 288 pp. • 50¢

Since this is a collection edited by an Ohio librarian, published as part of the Dell "Laurel-Leaf Library" for the express purpose of introducing young people to science fiction through some medium other than comics and horror films, there is a reason why you will find most of the contents familiar. Since my own "The Sands of Time"—published in Astounding in 1937—is included, I'll forego my usual carping about the word "great" in the title—though Zenna Henderson's "Pottage," Wilmar Shiras' "In Hiding," Isaac Asimov's "Nightfall," and H. G. Wells' "The Star" may deserve the title. With them are such excellent stories as Poul Anderson's "The Martian Crown Jewels," Arthur C. Clarke's "History Lesson," Robert Heinlein's "The Roads Must Roll," Wells' "The Stolen Bacillus," an excerpt from Jules Verne's "Round the Moon," and—least of them all, and least remembered, Nelson Bond's "Vital Factor"—a Martians-among-us story. Half of the recent stories were first published here.

You'll notice some of the elements that make Mrs. Smith's selection a good one for teen-agers. There is great variety in style and theme. There are strong plots and "think" pieces. There is drama, melodrama and humor. There is realism and romanticism. Some of the writing should cause no difficulty for junior high school students, and some of the stories are plenty good enough for college consideration.

Almost anyone would have made a different choice: science fiction is too rich a field for it to be easy. But this is a good one for newcomers.

SWEENEY'S ISLAND

By John Christopher • Simon and Schuster, New York • 1964 • 218 pp. • $4.50

This novel by the author of "No Blade of Grass", "The Long Winter" and many another more orthodox science-fiction yarn is only peripherally science fiction. No reader of this magazine will fail to spot the indications that general readers may not understand, so there is no reason to conceal the gimmick as the publisher does.

Sweeney is an English tycoon who gathers up an odd lot of bored hangers-on in London café society—members of a kind of sub-Establishment—and takes them off on a Pacific cruise which ends in deliberate shipwreck on a "lost" island. This island is overrun with monsters of the milder kind: it is the site of an experiment in the effects of radiation on the flora and fauna. It has been well-stocked, so that it offers just about everything that was available to the Swiss family Robinson or Jules Verne's castaways. But Sweeney's sadistic motive is simply to sit by and watch people go to pieces. This they do methodically and predictably, with help from an efficiently domineering steward.

REGAN'S PLANET

By Robert Silverberg • Pyramid Books New York • No. F-986 • 1964 • 141 pp. • 40¢

There is a wonderful idea here—the tribulations of a Robert Moses of 1992, who is saddled with the job of putting on a World's Fair to celebrate the five-hundredth anniversary of Columbus' discovery of the Western Hemisphere, and to recoup the sliding reputation and fortunes of a fifth rate, flat broke United States. Unfortunately, it remains a mildly interesting yarn on the level of the old *Thrilling Wonder* experiments with interplanetary business, movie making, *et al.*

Claude Regan, boy genius, is somewhat less ruthless than the hero of "The Carpetbaggers". He decides that a World's Fair in space, in a satellite world with tenders taking the suckers up in relays, will be sensational enough to accomplish the prestige objective and can be made to return a profit to some of the people who participate—at the expense of the others. The interest shifts to his wheeling and dealing as head of Global Factors and the Fair is shoved off-stage until a miracle has to be pulled.

I don't know who could have written the book this should have been, but Bob Silverberg didn't.

MIKE MARS AROUND THE MOON

By Donald A. Wollheim • Doubleday & Co., Garden City, N. Y. • 1964 • 192 pp. • $1.25

This series of yarns for young people up to about age fourteen is on the level of the "Tom Swift" books of a couple of generations ago, and considerably better than the present "Tom Swift Junior" series. Its prime advantage, especially for a juvenile audience, is the air of authenticity Donald Wollheim has been able to give the situations and settings, thanks to Air Force and NASA co-operation.

The young hero is one of a group of secret astronauts, younger than the acknowledged lot, who can go quietly ahead with the various experimental phases of the space program and not have to worry about publicity or a "space race". Nevertheless in the most recent books the race with Russia is the theme and there is an old-fashioned villain in the person of a Soviet cosmonaut. This time, since he can't get into orbit around the Moon first, Kosmodin tries to keep young Mike from getting back alive.

The author's problem is that he has

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had to push so far ahead of the actual man-in-space program that he is also getting ahead of his realism and falling back on the tried and true situations of sub-teen adventure.

THE ETERNAL MAN

By Charles R. Long • Avalon Books, New York • 1964 • 191 pp. • $2.95

This is not one of Avalon's occasional winners, but it is far from falling among their dregs. It's a pretty competent yarn about a man who, to his own consternation and for no reason he can fathom, has been around without aging visibly for at least four thousand years.

Philip Methusa, naturally, takes the long and relaxed view of the feverish society of the Twenty-third Century. He fails to realize that his shorter-lived associates are less relaxed, and is duly forced into the thick of the financial and political wheeling-and-dealing that is supposed to lead to dictatorship over America and the Earth.

But it seems there are immortals from Sagittarius around . . . and others from the Pleiades. Back on page 173 a domineering woman has threatened to wipe Texas off the face of the Earth if her demands aren't met in ten hours.

Sound familiar?

BEYOND THE FARTHEST STAR

By Edgar Rice Burroughs • Ace Books, New York • No. F-282 • 125 pp. • 40¢

I'm afraid that in his last years ERB was getting bored. This paperback original—Canaveral is to bring out a hardback edition later—consists of a novelette—the title story—that appeared in *Blue Book* in 1942 and a sequel found among his manuscripts last year. They were evidently to have started a new series of fantastic adventure yarns laid on the several planets of a star nearly half a million light-years from Earth.

The nameless hero is an American flyer, shot down over Europe in 1939, who promptly comes to in the body of one Tangor, on the planet Poloda of the star Omos. Poloda is one of a chain of planets that chase each other's tails around Omos in the same orbit, so close together that their atmospheres overlap. Consequently an adventurous individual like Tangor could simply climb into a 'plane and fly from one world to the other, *ad infinitum*. He was clearly about to start doing this in the third episode of the first volume of the new series, never written. Meanwhile his adventures as trainee, warrior, spy and misunderstood lover are strictly according to the Burroughs formula of capture and escape that he exercised diligently for thirty years.

For the Bibliophiles. The Burroughs Bibliophiles, that is.

A CLUTCH OF "CLASSICS"

As you will note, this classification is really just a subterfuge to break up the current flood of reprints and rereprints into smaller chunks. Most of the books included are both venerable and good—at least, for their time. H. G. Wells, it appears, must have followed Burroughs into the public domain; everyone is reprinting him.

A PRINCESS OF MARS and A FIGHTING MAN OF MARS

By Edgar Rice Burroughs • Dover Publications, Inc., New York • No. T-1140 • 1964 • 356 pp. Ill. • $1.75

As Burroughs buffs will realize, this is a peculiar combination: the first Mars book—which breaks off in mid-action—and the seventh in the series. Just to add to the peculiarity, the table of contents for "Princess" begins in the middle of the book, with Chapter XVI. Four of the five original Schoonover illustrations for "Princess" and the frontispiece of "Fighting Man" are reproduced. (Some Burroughs Bibliophiles prefer these Schoonover illustrations to St. John's!)

ATLANTIDA

By Pierre Benoit • Ace Books, New York • No. F-281 • 192 pp. • 40¢

A 1920 French successor to Haggard's "She," in which the survivors of Atlantis are found in the midst of the Sahara, ruled by the beautiful Antinea, who plates her ex-lovers with the lost metal, *orichalcum*.

THE INHERITORS

By William Golding • Pocket Books, Inc., New York • Cardinal GC-787 • 213 pp. • 75¢

A 1955 *tour de force*, reconstructing the life of the last Neanderthal men. It was republished in 1962 after the success of *Lord of the Flies*.

THE PORT OF PERIL

By Otis Adelbert Kline • Ace Books, New York • No. F-294 • 192 pp. • 40¢

Kline was Burroughs' best and most vigorous imitator, who dreamed up a better Venus than ERB did. This is the third and last of Robert Grandon's adventures on the "Planet of Peril"—original vintage, 1932. There's a grand cover and frontispiece by Roy Krenkel, and Ace swears this one is "complete and unabridged".

SINISTER BARRIER

By Eric Frank Russell • Paperback Library, Inc., New York • No. 52-287 • 176 pp. • 50¢

One of the great novels from *Unknown* of 1939, and one of the first to use Charles Fort's "documentation" of the idea that "We're property."

LORD OF THE SEA

By M. P. Shiel • Crown Publishers, New York • Xanadu Library • 299 pp. • $1.45

Most people either rave over Shiel's strange books or thoroughly hate them. "Lord of the Sea" appeared first in 1901; this edition, revised, dates from 1924. You'll find it quite dated, and savagely anti-Semitic.

THE PURPLE CLOUD

By M. P. Shiel • Paperback Library, Inc., New York • No. 52-232 • 191 pp. • 50¢

The last man on Earth wanders through the horrors left by a comet's tail, which has wiped out all life but him—or has it? I doubt that you'd ever recognize it as the source of the movie, "The World, the Flesh and the Devil."

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brass tacks

continued from page 6

frame to which the stars and observers 1, 2, and 3 are fixed. After the shaft has been accelerated, it is motionless with respect to observer 4. The problem states that the relativistic contraction is a factor of ten. Therefore the velocity of the shaft after acceleration will be about 0.995c or 99.5% of the speed of light—c = 1 light-year per year. The details of the motion depend on the exact method of accelerating the shaft. Let us consider two of the many possibilities.

Case I:

First, let us assume that every particle in the shaft is accelerated simultaneously, according to observers 1, 2, and 3. To do this, we suppose that each particle of the shaft has its own rocket that accelerates it to the right so that the velocity of each particle becomes 0.995c. Observers 1, 2, and 3 all agree that the shaft is still eleven light-years long. Observer 1 will be in the light in about 1.005 years at which time observer 2 will still be in the dark.

Observer 4 says that originally the shaft is moving to the left with respect to himself at 0.995c. Because of the relativistic contraction, it appears to him to be 1.1 light-years long. (Observers 1 and 2 appear to him to be 1 light-year apart.) He first observes the right end of the shaft to stop with respect to himself. The left end stops about 109.45 years later, with the intermediate particles stopping at intermediate times. After all the particles have stopped, observer 4 determines the length to be 110 light-years. Since observer 4 is stationary with respect to the shaft, we conclude that it physically has been stretched by a factor of 10 by the action of the rockets.

This conclusion is consistent with the determination of observers 1, 2, and 3 that the length is eleven light-years. Since the shaft is moving with respect to them at 0.995c, a relativistic contraction of a factor of 10 would be expected.

Thus we see that by requiring all of the particles of the shaft to accelerate simultaneously, as seen by observers 1, 2, and 3, we physically stretch the shaft. This is not a very practical thing to do. (If it breaks, we may get light through after all.) Let us require, instead, that the length of the shaft, measured in a frame of reference stationary with respect to it, remain constant. Thus no rocket energy will be wasted in stretching steel.

Case II:

Before the acceleration, observers 1, 2, and 3 observe the length to be eleven light-years. After the acceleration they observe it to be 1.1 light-years. However all of the rockets do *not* fire simultaneously. Observers 1, 2, and 3 see that the left end of the shaft accelerates about 9.95 years before the right end, with intermediate particles accelerating at intermediate times. Observer 4 observes that originally the shaft was moving to the left with respect to himself at 0.995c. Because of the relativistic contraction, it appears to him to be 1.1 light-years long. He first observes the right end to stop with respect to himself. The left end stops about 9.95 years later, with intermediate particles stopping at intermediate times. After all of the particles have stopped, observer 4 determines the length to be eleven light-years. It will again be about 1.005 years before observer 1 receives light from the left hand star, and observer two will still be in the dark at this time. Although observers 1, 2, and 3 now observe a contraction to 1.1 light-years, it takes 9.95 years to happen, much longer than overnight. By delaying the firing of the rockets by greater amounts, the closer they are to the end of the shaft—from the viewpoint of observers 1, 2, and 3—we avoid stretching the shaft.

One now may wonder whether there is an observer 5 who observes all of the rockets to fire at the same time, since observers 1, 2, and 3 see the left end accelerated first and observer 4 sees the right end accelerated first. He is on a reference frame which moves to the right with respect to observers 1, 2, and 3 with a velocity of about 0.9045c, and to the left with respect to observer 4 with the same velocity. The relativistic contraction corresponding to this velocity is a factor of 2.345. Observer 5 says that originally, the shaft is moving to the left with respect to himself at 0.9045c. Because of the relativistic contraction, it appears to him to be 4.691 light-years long. Simultaneously, all of the particles reverse course and move to the right, again at 0.9045c. The length still appears to be 4.691 light-years. Which observer is right? It's all relative. Two general remarks:

1. No point on the shaft may move with respect to any observer or any other point on the shaft at a velocity greater than c.
2. An observer who observes all of the particles to be accelerated simultaneously, observes no change in the apparent length.

If anyone would care to check my arithmetic, I'd be glad to send him a copy.

JAMES C. WILCOX
148-45 89th Avenue
Jamaica, N.Y. 11435

This is one of about thirty letters giving essentially the same answer. It boils down to this: the problem is in the rate of acceleration!

Dear Mr. Campbell:

Every few issues the old argument about the dowsing rod crops up again. I thought it had been settled long ago.

For several years in the civil engineering field, including four in the U.S. Air Force, I have used and seen used dowsing rods for locating pipes, and have never questioned the accuracy and feasibility of the method.

We use two brass welding rods, each bent ninety degrees at one end. The short bend is placed in a metal tube, so that it moves freely. One grips the tubes, one in each hand, holds the rods as nearly horizontal as possible, close together and parallel.

Then walk. When the rods swing apart, you are there.

Mark the spot, and come at it again from well out and at ninety degrees. This guarantees that you won't miss the pipe a foot or two. It never seemed to matter what the pipe was

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made of—wood, concrete, cast iron or even plastic.

All I can say for anyone who doubts the method is "Don't knock it until you've tried it." I have seen a citified contractor lose a twenty dollar bet on locating an eight-inch tile—which had no water flowing through it. We hit it the first time.

Don't ask me to explain it. I can't explain the solar system, either, but it's here.

In your August issue you had a letter from a fireman, one John P. Conlon of Newark, Ohio, on smoking. I'm a newspaper reporter, and have even publicly noted an unusual aspect of fires. Generally the first thing a fireman wants when he stumbles out of the boiling smoke is a cigarette.

Again, I don't try to explain it. I just grab an extra pack when I chase a fire engine.

Mr. Conlon notes: firemen down our way refrain from drinking. They note more empty bottles beside beds and couches that become funeral pyres than butts in the springs; and more often when the smoker caused the fire a primary factor was an inebriated—or at least slightly pickled—smoker.

Though tobacco might be a contributing cause of cancer, particularly lung cancer, I agree with Mr. Conlon that the CO and the CO_2 probably are more dangerous. I quit using a lighter some time ago, when I noted that the fluid caused my skin to become irritated through the pocket lining where I kept it. Tension headaches, common to the newspaper profession, declined in incidence by half, though I smoke as much as ever. I light with matches, but only after the head has burned down.

As a layman on the subject, I would guess that the CO and CO_2 in a cigarette have more carcinogenic action than does the nicotine, and would further guess that these elements do not in themselves cause cancer, but help promote existing cancerous situations, or developing ones due to other causes. How do you explain the half-pack-a-day smoker contracting cancer, while the three-pack-a-day smoker doesn't?

It seems to me that if tobacco was all as dangerous as its detractors want to make it out, it wouldn't make so many exceptions! (And, as to its effect on unborn children, my wife smokes—the first son weighed nine pounds, the daughter weighed seven, and the last son, three weeks early, weighed eight pounds, seven ounces. If it does make babies smaller, thank God and Reynolds Tobacco Co.)

In the same issue, one Donald H. Rogers of Ivyland, Pa., and one editor John W.—Speak Louder, Please—Campbell have shown dramatically that they have never driven around my neighborhood.

Messrs. Campbell and Rogers, animals shy away from today's highways for the same reason horses stampeded from the Model T; noise.

The modern, high-powered car whistles. Stand beside a high-speed highway and you'll hear it. It is mostly far too much exhaust from far too powerful an engine trying to get out of a far too small pipe.

The same chicken that won't go near an open highway can't be chased out of a driveway with a stick. Slow the car down, and it doesn't whistle. For instance, our farm roads are littered with chickens, dogs, hogs, etcetera—except, and notably so, cats—whereas our higher speed highways are almost devoid of corpses.

Another, and probably far more logical, explanation is that chickens have become too expensive to be allowed to wander out into highways. And, in some metropolitan areas, there aren't any to wander. Zoning, you know. (Besides that they stink.)

As to evolution, you have forgotten a little field of enterprise called "animal husbandry." Where it took the whole family and half the guests to chase down a chicken for dinner fifty years ago, my five-year-old son can latch on to the meaty, egg-producing bird of today with no trouble. Chickens definitely aren't bred for brains. If you don't believe it, try raising them. The only thing the modern chicken computes is when the next feed comes out.

Consider this: man has been shooting game birds for centuries. Has been, is, and will. Old birds learn to be wary, or don't get too old. But the young ones are just as ignorant and defenseless as ever. The guns are better, the bags bigger, and yet the average hunter is a far worse marksman. (He's a victim of evolution, too—his supper doesn't depend on his aim!)

Or take whales. The electric light and Standard Oil saved them, not evolution.

You've probably heard the fable that insects get so used to DDT they eat the stuff. They eat it all right, but only one meal per each. It is still the preferred insecticide where outside conditions—such as penetration, weather, etcetera—don't preclude its use.

The Amerind has always been able to compete with the white man. He was just late getting exposed to civilization.

I say evolution takes time. It has taken thousands of generations of corn to reach today's beautiful grain. Breeding started two centuries ago, and each year is at least one generation, more on modern breeding farms. And, even at that, it wouldn't take three generations of uncontrolled reproduction to get back to the original skimpy, futile Indian corn.

I agree with one point, and don't see how anyone could disagree. If a race is reduced to an elemental level, the only possible progress would be among those best suited to survive under the new conditions.

As a last thought, may I add that man is still killing himself off in the United States at the rate of forty thousand per year with automobiles? Yet man has admittedly proved himself as the most adaptable of all higher earthbound species. Since I haven't evolved my spring-steel rib cage, I will continue to wear a seat belt, thank you.

T. Edward Pertuit
Route 4, Box 60
Darlington, S.C.

So what good is a spring-steel rib cage, or a safety belt, with a truck sitting on your skull!

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atmosphere, it should be stressed that certain difficulties emerge from such a line of argument. It is equally possible that some alternative explanation of the Sidmouth events would prove more satisfactory. But, to the author's knowledge, no such explanation exists.

So we can regard the long-continued observations of sporadic damage to processed plates and films, as described as presumptive evidence of the occasional presence in rain-, and spring-water of viable bacteria capable of attacking gelatine with extraordinary rapidity. Perhaps they may be of extra-terrestrial origin. The latter statement rests mainly on the remarkable association found between invasions of the "foreign" organisms, inferior conjunctions of the planet Venus, and severe geomagnetic storms; and also on their complete tolerance to highly toxic silver salts in contrast to the lethal effects of these same salts on normal types of gelatine-liquefying bacteria. Furthermore, the invading organisms showed strong fluorescence in ultra-violet light, a reaction that might well be of positive survival value on passage though free space.

Notwithstanding all this favourable evidence, definite confirmation of a spatial origin for these living bacteria must clearly be sought in a direct observation of organisms, similar in all respects to those described here, whilst in transit between Venus and the earth. This could doubtless be made from an orbiting satellite vehicle; but until data of this kind is available the origin of the mysterious invading bodies must remain unknown.

Finally, there is the not unnatural question: "Why have there been no reports of similar happenings in other localities?" The only answer is that very few instances of conditions at all similar to those experienced at the Norman Lockyer Observatory are likely to be found elsewhere. Indeed, had photographic work at Sidmouth wholly followed conventional practice, it is safe to infer that the "foreign" invaders would not have been spotted.

For the benefit of the science fiction addict it may be worth remarking that such a bacterial invasion—if that is the true explanation—is an infinitely more elegant way of interplanetary travel than all the marvels of modern rocketry. A wider implication of this idea however may raise fundamental questions of the very origin of life on this or any other particular planet.

INTERVALS BETWEEN GEOMAGNETIC STORMS AND BACTERIAL ACTIVITY

Event		*Date of Onset*	*Degree of Bacterial Activity*	*Inf. Conj. Date*	*Nearest Geomagnetic Storm*	*Time Lag (Days)*
1	a	1937 June 5	Water-borne infection very severe in first phase, less severe in recurrent outbreaks. Long continued activity.	1937 April 18	1937 April 24-25* 26-27	41
	b	1938 Aug. 31				
	c	1939 Feb. 6				
2		1948 July 26	Severe.	1948 June 24	1948 May 21-22	66
3	a	1956 July 23	Water-borne infection preceded by air-borne yeast like organisms. Very severe in initial stages.	1956 June 22	1956 May 23-25	61
	b	1957 July 28				
4		1958 May 8	Relatively slight and short lived.	1958 Jan. 28	1958 Feb. 11*	57
5	a	1959 June 17	Moderate and short lived.	1959 Sep. 1	1959 May 11-12*	35
	b	1959 Nov. 2	Slight but long continued.		Sep. 3-4	59
6		1961 June 21	Moderately severe; short lived.	1961 April 10	1961 April 14-15	67

*Signifies "great" geomagnetic storm.

INVASION BY WASHING WATER

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The author records with pleasure his sincere thanks to several professional colleagues of the Advisory Services of the Ministry of Agriculture, Fisheries and Food, at first stationed at Seale-Hayne Agricultural College, Newton Abbot, and later at Staplake Mount, Starcross, Devon, for their sustained interest and collaboration during the long-term investigations.

Factual data obtained directly from cultural, and gelatine-liquefaction tests, etc., which they made are quoted here with the permission of the Deputy Directors of these Services (Veterinary Investigation, and Dairy Bacteriology) of the Ministry.

The author wishes to thank also the Observatory attendant, Mr. A. J. Denner for his invaluable help in collecting the numerous water samples required for the routine tests.

[1]None of the large number of photographic plates attacked by the micro-organism showed any selective action with respect to photographic density. Frequency of attack, as judged by "pitting", appeared quite similar in the densest silver deposits to that found in the fog background (clear zone) of the plate.

[2]The synodic period is defined as the interval of time elapsing between successive inferior, or superior conjunctions of the planet with the Sun. At inferior conjunction, Venus lies between Sun and Earth.

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the extremist

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point—the extreme Liberal viewpoint so dominated that any alternative viewpoint became despicable.

Look carefully at the essence of the Totalitarian, One-party system, and you'll find that it depends on complete agreement on viewpoint. Hitler used to get ninety-eight per cent *Ja* votes; there was complete one-philosophy agreement.

The hermaphroditic earthworm has male and female sexes . . . but only one viewpoint.

It isn't actually a question of a two-*party* system being needed, but of a two-*philosophy* system. And that the United States has not had in twenty years or so.

The Liberal viewpoint has become so overwhelmingly dominant that it has been almost impossible to discuss any other viewpoint without being accused of inhumanity, injustice, viciousness and general moral turpitude. And not merely politically has the Liberal viewpoint dominated; nearly all newspaper writers and reporters are extreme Liberals—or would have been called "Extremists" thirty years ago!

Remember that "extremist" is a term applied to someone who disagrees with your philosophy. The man who is starting an insurrection on behalf of your own philosophy you call a "militant idealist." John Brown helped start the Civil War—but *he* wasn't an "extremist"—he was a militant idealist.

But I've long wondered what Abraham Lincoln thought of him. Lincoln was trying to solve the problem by persuasion, argument and compromise—by evolution, instead of revolutionary bloodshed. I wonder if he saw John Brown as a heroic idealist?

The press, since Roosevelt's time, has been overwhelmingly one sided—not merely in editorial comment, but in the reporting of events. No press can ever publish all the things that happen; there must always be a selection of news, simply because of the sheer volume of data. There are, on any ordinary evening, several hundred speeches being given by several hundred speakers before several hundred audiences in a metropolitan area like New York. Which ones should be reported? You *can't* report them all . . .

The selection of which ones to report can make all the difference. If the non-Liberal viewpoint feels unjust, antisocial, improper, or downright evil to a man, he will find presentations of that viewpoint irritating, and, somehow—they don't seem newsworthy, when so much more interesting talks are being given elsewhere.

Again, a reporter can't report everything that a speaker says in a one-hour talk; he has to condense it, and stress only the highlights. But . . . what are the highlights? The points that most acutely ruffle his personal feathers? The statements that seem, to him, to prove the crackpot nature of the viewpoint he personally rejects? It takes only a little lifting out of context to change the entire meaning of a statement—and there's nothing so subtle as a personal conviction to do that lifting - out - of - context even before you've consciously started to write it down. You remember the things that seemed "important"—and what's more "important" than a statement that you dislike acutely?

In the early part of the current campaign, for instance, Senator Goldwater made some statements about the use of nuclear weapons which were widely—and I might say wildly—published by the Liberal-dominated press. Every major columnist, and major newspaper editor, knows, as a necessary part of his business, the basic doctrines of United States General Staff policy. But not one of those major columnists or editors, so far as I've been able to spot, mentioned that *General* Goldwater's statements were, in fact, directly derived from standard General Staff School policy doctrines; every paper implied that they were Goldwater's personal illiberal, extremist ideas.

The Liberals have dominated the philosophy of the country so solidly that the two-viewpoint system necessary to development of any area of living-organism development has been missing. The tendency runs throughout the whole system of the culture today.

It isn't just political, either; it's the same one-viewpoint-only system that I've been attacking in Physics, in the Professional Medical groups, in many areas. The basic danger is the danger of settling for one philosophy only, for one viewpoint only. The degeneration of a true two-viewpoint system into an hermaphroditic system.

Under Roosevelt, capital—management—property owners—were denied the use of force in defending their properties, while Labor was confirmed in its right to use force. The Liberal doctrine then held that Labor's use of the sit-in, the strangulation technique of pickets, of forcefully imposed monopoly practices were Good and Just and Fair . . . and, therefore, "not extremist."

The Liberals are currently a bit disenchanted with Jimmy Hoffa, and some of the other monopolistic Labor leaders.

Currently, it's being accepted by the Liberals that any minority group has a "right" to use force, and call it "peaceful demonstration." They are right to do so, because they are a minority—it's not necessary to be justified, only to be inferior in numbers.

The Liberals also are so humanity-stricken that the idea of punishment for crime appalls them; it's called "vengeance" and various other opprobrious terms. And any lazy slob who won't work for a living, is an "unfortunate underprivileged individual" who should be helped in his misfortune.

Currently, much of Goldwater's support is being labeled as a "white backlash," because the Negro problem has been one of the dominant drives of the Liberals recently. (The

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Negro is now being granted the same use of force that the Unions were a generation ago; the consequences of two groups, each given an "exclusive" privilege of force to gain their ends in the society is apt to be very interesting.)

I strongly suggest that it is *not* a *white* backlash—but an *anti-Liberal* backlash. That there are millions of solid citizens who are most excessively fed-up with the idea that every lazy bum is an "underprivileged" individual who needs help. That everybody's equal—when anyone with half a brain can see that the Universe isn't built that way, men aren't built that way, and that it generally doesn't pay off to try to buck the fundamental nature of the Universe. Only the "humanist doctrine" of the Liberals holds that the laws of the Universe aren't *really* laws of the Universe, but are generated and maintained only by human agreement. That if we all just agree that the Moon spins on its axis every two days, why, of course, it will. We just need to accept a new idea, and things change to fit that idea . . .

It's apt to be a bit tough on the Negroes—they're getting slapped by the anti-Liberal backlash, because they are, currently, the Liberals' pet project.

Incidentally, typically the absolute Liberal domination of the press and even of professional Journals, makes it impossible to publish even careful scientific analyses of the facts of Negro-White racial characteristics if the analyses don't agree with current Liberal doctrine. I was, personally, curious about the data that was collected in the nine-year study of school children in the Savannah, Georgia, school system, and tried to get hold of the original technical paper.

The work was done by Savannah County school officials; it was processed by electronic computer, under the guidance of University of Georgia scholars. The resultant data and correlations could not be published in any professional journals of psychology, sociology or anthropology in the United States; it was published however, in a Scottish journal. An American journal accepted the raw data on the scores made by Negro children, and the scores made by White children, but only on the condition that the raw data only be published, and that in separate issues, and that no cross-correlations be published.

A one-philosophy system does not permit publication of material supporting an alternative viewpoint, or attacking the officially accepted conclusions. In the words of the song "You gotta ac-centuate the positive, and ee-liminate the negative . . ."

I observed with interest that despite an urgent request signed by a dozen major United States Senators, the Health & Welfare Department refused to allow Krebiozen to be shipped to cancer sufferers who were currently using the drug and desperately wanted it. A one-philosophy system eliminates the negative; the alternative viewpoint is not to be tested or considered, but to be rooted out, demeaned, or in any way possible, removed from competition with the Only Authorized Viewpoint.

A press can be free to publish what it wants—and still be ruthlessly censored. If a single philosophy dominates the members of that press, the fact that they are legally empowered to print both sides of the issue is meaningless. It's like a man suffering from violent agoraphobia, so afraid of open spaces that he can't bear to step outside his house. The fact that he is not legally imprisoned doesn't do him a bit of good; he has deep psychological convictions that censor his actions far more effectively than any legal system could.

When a one-philosophy system dominates a culture—a two-party system does no good. And when a second philosophy begins to break through the shell, when an alternative viewpoint begins to make itself heard—the reaction of the one-viewpoint-only group becomes both panicky and virulent.

For the first time in a generation, Americans this year have the opportunity to vote on a two-*philosophy* ticket. It will be a far less peaceful, a far more emotional campaign than we've known in the past decades. But that's understandable; nobody gets very emotional about voting for Tweedledee vs. Tweedledum, and when the Demicans and the Republicrats are contending . . . who cares?

This is being written in August, before the campaign really gets started. But that doesn't make any difference; we can predict this much with fair certainty: Whether Goldwater wins the election or not, he will have made a great and vital change in the American political system. The Alternative Viewpoint will have been replaced in the American political scene.

The Liberal extremists are just as destructive as any other kind of extremist—and they've been in complete domination for thirty years. Simply because you're used to them, doesn't make them non-extreme. The Eskimos don't consider the Polar winters extreme, either, remember!

An "extremist" *appears* to be one with a massively different viewpoint; this doesn't mean he *is* an extremist. Like the medical term "quack," it means, largely, "someone whose methods and ideas I dislike and distrust." Thus Jesus was, in His society, "an extremist," while Torquemada, busily torturing heretics, was considered, in the society of his place and time, "a moderate."

It's always worth remembering that George Washington was a criminal, with a price on his head. While the Liberals of her day held that Carrie Nation, going around with her famous hatchet smashing up bars, was a "militant idealist".

It normally takes two viewpoints to begin to get a reasonable evaluation of a dynamic problem.

It's just that a two-viewpoint system is *so* much harder to think with. The one-sex system makes things so much less troublesome. If everybody just agreed on the same ideas, just see how much "wasted" time and energy could be saved. No more arguments—no more tensions and disputes—no more doubts and heartaches . . .

No more progress, either.

THE EDITOR

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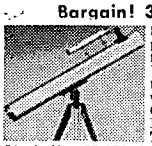

See the stars, moon, phases of Venus, planets close up! 60 to 180 power—famous Mt. Palomer Reflecting type. Unusual Buy! Equipped with Equatorial mount; finder telescope; hardwood tripod. Included FREE: "STAR CHART"; 272-page "HANDBOOK OF HEAVENS"; "HOW TO USE YOUR TELESCOPE" book.

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SUPERB 6" REFLECTOR TELESCOPE!

Inc. electric clock drive, setting circles, equatorial mount, pedestal base, 4 eyepieces for up to 576X.

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EARRINGS	No. 1814-A	No. 1704-A	$2.20
CUFF LINKS	1827-A	1714-A	2.20
PENDANT	1818-A	1729-A	2.20
¾" Tie Clasp & Cuff Link Set	1831-A	1743-A	3.85
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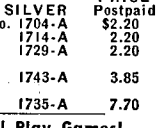
Solve Problems! Tell Fortunes! Play Games!

NEW WORKING MODEL DIGITAL COMPUTER

ACTUAL MINIATURE VERSION OF GIANT ELECTRONIC BRAINS



Fascinating new see-through model computer actually solves problems, teaches computer fundamentals. Adds, subtracts, multiplies, shifts, complements, carries, memorizes, counts, compares, sequences. Attractively colored, rigid plastic parts easily assembled, 12" x 3½" x 4¾". Incl. step-by-step assembly diagrams, 32-page instruction book covering operation, computer language (binary system), programming, problems and 15 experiments.

Stock No. 70,683-A ..... **$5.00 Ppd.**

Perfect for Plant, Lab, Hobby, Home

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Dozens of practical applications for this low-priced photoelectric kit. Make a photoelectric counter for entrance ways or conveyor belts, light-actuated door opener, lightmeter, transmitter power output indicator, countless circuit designs possible. Includes: 3T-4 CdS photoconductors (½" diam. x ½" lg), mounting bracket. Sigma AC-DC relay (2 amps resistive load), 22K-Ohm, 1-watt resistor and a 52-page booklet defining 19 different projects.

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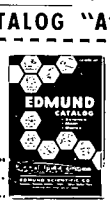
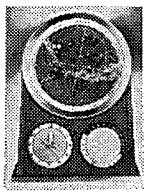


AUTOMATICALLY SHOWS TIME, TIDES, POSITION OF SUN, MOON, STARS



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19 DIFFERENT READINGS AT A GLANCE

Startling scientific achievement, yet completely practical and functional. Designed for the space age by world renowned scientist, Dr. Athelstan Spilhaus, Dean of Technology, University of Minnesota. Handsome conversation piece—constantly up-to-date encyclopedia of the sky. The Spilhaus Space clock has beautiful fruitwood case and 3 sky-blue dials. Blends with decor of any home, office, club room, classroom, museum, hotel, etc. Large dial shows sun position, daily sun rise and set, moon position, moon rise and set, phase of moon, low and high tide time, current stage of tide, day and month of year, current position of stars in sky, time of star rise and star set, relationships of sun, moon and stars, sidereal or star time. Left dial shows local time. Right dial shows world time including major U.S. cities and Universal (Greenwich) time. Operates on house current—requires only one simple setting for any geographic location. Measures 10" high x 11½" wide x 4½" deep. Presentation plaques available. Complete satisfaction guaranteed or money refunded.

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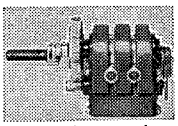
WAR SURPLUS ELECTRIC GENERATOR



Brand new Signal Corps Electric Generator for scientific experiments, electrical uses, demonstrations. Generates up to 90 volts by turning crank. Use in high impedance relays. Charge ground and bring up night crawlers for bait or study. 2 Alnico Magnets alone worth original price. Wt. 2 lbs. Cost to Govt. $15.

Stock No. 50,225-A ..... **$6.95 Postpaid**

Same type generator, mtd. with light, as electricity demonstrator.

Stock No. 50,365-A ..... **$11.95 Postpaid**

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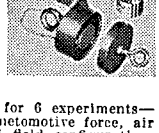

Hobbyists, instructors and industrial lab men will find this well-built Electro-Magnet invaluable. Demonstrate principles of electro-magnetism. Actually lifts 100 lbs. when powered by a single 1½V flashlight battery. Easily deactivated. Includes instructions for 6 experiments—lifting power, magnetic flux and magnetomotive force, air gap, area of contact, retentivity and field configuration. Unit includes magnet and yoke assembly, battery holder, leads, clips and eyebolts. Steel core and yoke precision ground for max. flatness. About 2½" dia. x 4½" lg. Wt. 2 lbs.

Stock No. 60,435-A ..... **$10.00 Ppd.**

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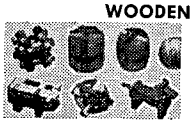

12 Different puzzles that will stimulate your ability to think and reason. Here is a fascinating assortment of wood puzzles that will provide hours of pleasure. Twelve different puzzles, animals and geometric forms to take apart and reassemble, give a chance for all the family, young and old, to test skill, patience and, best of all, to stimulate ability to think and reason while having lots of fun. Order yours now.

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NEW Z-O-O-M TELESCOPE ZOOMS FROM 25X to 80X

Fine quality, erect image zoom telescope, for naturalists and hobbyists. 50 mm hard coated, achromatic objective. Separate zooming and focusing adjustments. Field of view at 25X is 1-degree, 30 minutes; zooms to 0-degrees, 35 minutes at 80X. Magnification scale marked on eyepiece mount. High resolution over entire field. Excellent for both terrestrial and celestial observation. Includes sunglass for safe solar observation. 22½" long on sturdy 10" tripod.

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NEW! STATIC ELECTRICITY GENERATOR

Sturdy, Improved Model

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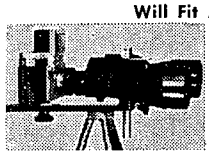
Order Stock No. 70,070-A ..... **$12.95 Postpaid**

BLACK LIGHT MAGIC-GLOW KIT

With this Kit, you can collect fluorescent rocks, paint with living light, write secret messages, learn invisible detection methods, even make a fluorescent Christmas tree! Kit uses long-wave blacklight, which is completely harmless to eyes, but causes fluorescence in over 3,000 substances. Includes Magic Glow Lamp, universal laboratory lamp stand, invisible water paints and ink, fluorescent crayon, tracer powder, pen, 3 brushes, specimens of fluorescent rocks: wernerite from Canada, fluorite from England; willemite from U.S.A. Plus book of 40 experiments.

Stock No. 70,256-A ..... **$11.95 postpaid**

NEW BINOCULAR-TO-CAMERA HOLDER Will Fit Any Camera



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Stock No. 70,718-A ..... **$6.00 Ppd.**
Stock No. 60,462, Same as above without book..... **$4.00 Ppd.**

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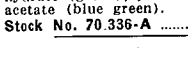
CRYSTAL GROWING KIT

Do a crystalography project illustrated with large beautiful crystals you grow yourself. Kit includes the book "Crystals and Crystal Growing" and a generous supply of the chemicals you need to grow large display crystals of potassium aluminum sulfate (clear), potassium sulfate (purple), potassium sodium tartrate (clear), nickel sulfate hexahydrate (blue green) or heptahydrate (green), potassium ferricyanide (red), and copper acetate (blue green).

Stock No. 70,336-A ..... **$9.50 Postpaid**



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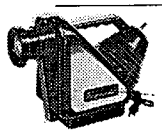
Stock No. 70,473-A ..... **$4.95 Postpaid**



Terrific Buy! American Made! OPAQUE PROJECTOR

Projects illustrations up to 3" x 3½" and enlarges them to 35" x 30" if screen is 6½ ft. from projector; larger pictures if screen is further away. No film or negatives needed. Projects charts, diagrams, pictures, photos, lettering in full color or black-and-white. Operates on 115 volt, A.C. current, 6-ft. extension cord and plug included. Operates on 60 watt bulb, not included. Size 12" x 8" x 4½" wide. Weight 1 lb., 2 oz. Plastic case with built-in handle.

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Europe is even more fetching in the fall. Cooler. Less crowded.

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